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Medical Progress During 1919

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Medical Progress During 1919

COMMENTS ON THE PROGRESS OF SURGERY DURING THE YEAR 1919.

WILLIAM FRANCIS CAMPBELL, F. A. C. S.,
Brooklyn, N. Y.

The purpose of war is to destroy the purpose of peace to reconstruct. Reconstruction fairly defines the lines along which surgery has progressed since the signing of the Armistice. Much has been done in an endeavor to restore function in the chronic manifestations of infection affecting the bones, and thoracic cavity; in injuries to nerves and tendons, and by the application of proper prosthetic apparatus. Much has been done in appraising the value of the vast clinical experience which the war furnished, and in standardizing new methods.

This colossal mass of material must be digested slowly; it must be properly orientated. The value of the deductions depend upon their relation to civil practice. The epidemics of war with their high mortality stimulated a strong reaction against old methods and a temporary popularity of new procedures, but we already observe a tendency to hark back to the basic principles evolved through many years of experienec and still unshaken by passing fads.

The Empyema Problem: The epidemics occurring during the war furnished a vast amount of clinical material for the study of the empyema problem. The high mortality during the winters of 1917 and 1918 stimulated an unusual interest in this problem. Under the old operation of thoracotomy the results seemed so disastrous, that newer and more rational methods were sought. Some treatment more efficient was demanded to combat a mortality of 50%. Indeed it seemed probable that one of the beneficent by-products of the war would be the evolution of a technique that overcame all the objections to the old operation of thoracotomy by its simplicity, its freedom from shock, and its recognition of the simple physical principle that negative pressure must be maintained within the thoracic cavity to insure a functionating lung. For while thoracotomy drained, it abolished negative pressure, and was followed by a collapsed lung. This was a serious compromise of respiratory function, and in cases of pneumoic involvement of the opposite lung considerably reduced the chances of recovery. And most serious of all was the possibility of the collapsed lung becoming imprisoned by adhesions and thickened pleura, and the inauguration of a state of chronic empyema which required the serious and deforming operations of Schede, Estlander and Delorme for its amelioration.

The unusual number of articles on empyema published during the past year bears witness to an enthusiastic endeavor to solve a trying problem.

It is inexpedient to critically review all of these contributions or to exploit the ingenious apparatus and paraphanalia that had as its basic idea the drainage of the pleural cavity under negative pressure.

In one of the best of these articles by Leyva and Legendre—"The Surgical Treatment and Prognosis of Empyema Following LaGrippe" (*Surg. Gyn. and Obstst., July,* 1919) the conclusions are as follows:

1. The prognosis in empyema is not based upon the nature of the micro-organism causing the condition, but is based, principally, upon the condition of the lungs.

2. As pleurisy starts early with grippe, we believe that it is best for the patients to treat them medically by aspiration and injection of specific sera, until the pulmonary symptoms have subsided. At this time surgical intervention has every chance of success.

3. The micro-organism causing the pleurisy has no bearing on the type of operation to be performed.

4. In pleurisy developing late, the pleurotomy opening must be large extending backward, resection of the rib is a necessity.

5. The classic treatment consisting of drainage without irrigation is the method of choice.

John A. Hartwell presents an excellent resumé, *"Treatment of Empyema"* (*Annals of Surgery, Vol. LXX, No.* 1). The purpose of his arguments is to call attention to the fact that if the experiences of the past two years are made the basis of the standard treatment of empyema, under conditions of pulmonary disease less abnormal than those existing during this trial, a distinct step backward will have been taken.

Reading of the history of empyema during the last five decades shows that from time to time there have arisen advocates of the so-called less radical forms

of treatment, who have enjoyed a short period of success. Failure, however, always succeeded this period. Gradually, through the constant teaching of thinking masters, this disease has recently been handled along sound lines of therapeutic technic, founded on a full comprehension of its pathology. Any falling away from this will only result in a period of again learning old lessons with its resultant suffering. His argument may be summed up in the statement that no form of treatment for empyema which disregards the thorough draining of the chest cavity by a rib resection and the gradual re-expansion of the lung by respiratory effort, meets the requirements. Other means will cure a certain number of cases, particularly in such times as the disease occurs in abortive forms, which it has done during the past two years.

Comment: With the exigencies of a war epidemic of empyema, many experiments were placed on trial. They were born of a sincere endeavor to improve a serious situation. In no way do we detract from our appreciation of this ingenious effort to improve the operative technique of empyema, but from our experience we are forced to conclude that they have only served to enhance the value of sound surgery and fundamental principles.

Dakin's Solution in the treatment of empyema has over-reached the mark; for while at first it dissolves inflammatory exudate and thus should hasten lung expansion, *its continued use* in the thoracic cavity produces the formation of a thick exudate which is apt to bind down a collapsed lung, and thus inaugurate a chronic process.

The pre-war treatment of empyema by thoracotomy, evolved through many years of experience, has not been shaken by any of the fads and fancies developed during the war. Nevertheless, because of our war experience, we have progressed in a *finer appreciation of the indications for operation,* and our mortality will show an appreciable reduction as we regard the conclusions of the Empyema Commission: Aspiration only until, 1st, there is absence of pneumonia; 2nd, presence of frank pus; 3rd, a walled off cavity to protect the mediastinum and the opposite lung from the evil effect of an open pneumothorax.

Howard Lilienthal presents a non-deforming operation for the cure of *"Thoracic Fistula and Chronic Empyema"* (*Annals of Surgery, Vol. LXX, No.* 1). He believes that chest-collapsing operations for the cure of sinuses following empyema, are, except in rare instances, unjustifiable and unsurgical. By these operations the attempt is made to bring the mountain to Mahommed—the immobile to the mobile—in a panicky effort to obliterate the pneumothorax at any cost.

The method described will restore the lost pulmonary function, and close the thoracic fistula without seriously reducing the capacity of the diseased side. Its dangers have been far less than that of the Estlander, Schede, Wilms or Delorme operations.

Technique of the operation: The intrapharyngeal method of anæsthesia while not indispensable is of such value and so simple that its adoption in these cases is advised.

The patient is placed over a pillow and on his sound side in a scoliotic posture, the intrapharyngeal positive pressure aiding respiration should there be embarrassment. The hips and knees are fixed, a pillow is placed between the knees and a strap from under the table maintains the attitude.

The *incision* is in the seventh or sixth interspace and by preference should not enter the old drainage wound. It begins behind the costal angle and extends almost or not quite to the cartilage. The knife now divides the intercostal structures at the middle of the wound by an incision about two inches in length close to the upper border of the lower rib. This incision is now lengthened forward and backward with stout scissors until a sufficient opening has been made to separate the ribs by blunt traction, exposing enough of the interior to work safely and keep clear of the lung. The opening is then further enlarged until it is the full length of the cutaneous wound, when a powerful rib retractor—Dr. Quervain's or the Author's—is placed in position and the ribs separated gradually as far as seems safe, usually about three inches. If necessary further exposure can be obtained by dividing from one to three ribs upward and downward.

The lung is next moblized by incising the thickened membrane and an attempt is made to find a line of cleavage between the membrane and pulmonary tissue, dissecting bluntly with instruments or finger. As the Anesthetist insufflates the lung by closing the free nostril and holding the patient's lips together while the air or ether vapor is forced through the intranasal portion of the tube, the lung will expand almost or quite filling the chest cavity. When the lung is entirely freed, and it is evident that no further expansion can be secured, the tract of the original thoracotomy wound is well curetted and a tube is drawn from within outward by a dressing forceps. The large wound is closed in three layers using chromitized catgut interrupted sutures for the muscles and silk or silkworm gut for the skin.

The usual time of healing is about four weeks from the day of operation.

The subject of visceroptosis is ably presented by Roland Hazen, "Rational Surgery of Visceroptosis by the Correction of Malfusion" (*Jour. A. M. A., Dec. 6th,* 1919).

By rational surgery the author means a constructive procedure which aims to replace and retain the colon by producing fusion at the back of the bowel where fusion should originally occur. Special attention to anatomic accuracy in the origin of the flexures is of vital importance to the re-establishment of visceral equilibrium. With the fundamental or primary defects thus repaired attention is directed to the individual correction of various secondary results.

To understand the rationale of the author's suggestions it is necessary to appreciate that visceroptosis is a congenital defect (96%) due to lack of proper agglutination and fusion of the peritoneum of the back with that of the cecum, ascending colon, hepatic flexure, splenic flexure and descending colon. These errors in fusion are harmful when later they result in ptoses, angulations, constrictions and traction strains; and they are considered under the general term "malfusion." Thus "malfusion" constitutes the fundamental pathology in visceroptosis.

The author criticises the prevailing operations of suspension plication, colectomy, etc., because they do not strike at the source of the error; that is, they do not correct the maulfusion, nor do they restore the satic equilibrium of the abdominal viscera one to another and therefore can scarcely be expected to give uniformly good results.

Malfusion is considered under two forms, hypofusions and hyperfusions.

HYPOFUSION, or laxity of attachments, permits prolapse of the colon resulting in abnormalities in the position and relation of the viscera. The position of the hepatic flexure is regarded as the vital point, and constitutes the key to the situation. Thus, if the hepatic flexure is permited to come downward, forward or inward, the transverse colon will necessarily be carried with it and allowed to sag, so that ptosis of the hepatic flexure is always accompanied by ptosis of the transverse colon. Furthermore, a primary ptosis of the hepatic flexure will be followed by a definite sequence of secondary changes in the position of the other viscera, constituting general visceroptosis.

By lifting the ribs and replacing the flexures in the upper abdomen, deep in the flanks, under the liver and stomach, and retained there, the liver and stomach rotation will be prevented. The pyloric outlet of the stomach will be elevated and brought further to the right, and the span of the transverse colon will be lengthened, and it will again hang as a festoon between the two upright fixed portions of the colon.

HYPERFUSIONS are localized adhesion formations usually having their origin in certain vestigial embryonic membranes. Fibrous hypertrophy and later construction, may occur as a result of the intermittent traction of a loose segment of the bowel. These formations will then produce constrictions and angulations of the colon, and traction strains at both ends of their attachment.

Technique of the Operation: The abdomen is opened in the median line and a thorough inspection is made of the position of the viscera, and the location of the adhesions. The colon is inspected starting at the cecum and proceeding up the right side and down the left, with particular attention to its attachments in the kidney, hepatic, pyloric and splenic regions. Adhesion bands are divided and the colon freed of all restricting bands.

For correcting the hpyofusion a number of parallel sutures are introduced into the mesocolon, beginning at the cecum. The needle at no place enters the bowel wall itself, but picks up the mesocolon close to the bowel. Thence, the needle is reintroduced several times, picking up all the fibrous fasciculi possible until the posterior wall of the flank is reached. At this point a deep stitch is taken, which must include the firm iliac fascia below and the lumbar fascia above. When these sutures are tied, the mesocolon will be obliterated, and the bowel will be replaced in its normal position, and firmly, evenly and uniformily attached to the flank. Likewise the hepatic flexure is anchored by inserting a suture in the edge of the gastrocolic omentum, and thence into the lateral abdominal wall, just beneath the liver. Similar sutures are placed at the splenic flexure and descending colon, if needed. Slackness of the transverse colon may be taken up by plication of its mesocolon, or suspension by the hammock operation of Coffee.

Results: The author claims that the active symptoms are not only relieved, but that these patients are virtually reconstructed, physically, mentally and functionally. Physical inefficiency and invalidism are replaced by ability to do work.

Comment: This is by far the most important contribution to the surgery of visceroptosis that has yet appeared.

In the systematic examination of some five hundred abdomens post-mortem, and the confirmatory evidence of the X-ray and clinical experience, the reviewer is convinced that ptosed viscera present a group of chronic pathological phenomena which are rationally explained by regarding them as developmental defects.

The abdomen is a centre of developmental defects for the reason that here developmental maturity implies not only growth but migration. Here many of the viscera must shift their position before normal development is attained; and it is this process of shifting or migration of the viscera to their ultimate destination that offers the possibility of many visceral defects.

In the process of evolving a biped from a quadduped it is evident that the moveable viscera must undergo definite alterations adapted to the new mechanical relationships. The function of the abdominal wall in this transformation is no longer that of a hammock, but that of a corset, and this corset-like support of the abdominal muscles is necessary in giving symmetry to the container and satisfactory support to the contents.

Enteroptotics are born, not made.

Hence, the vital need in these cases is to support the relaxed viscera at their proper levels by building up a belly-wall of solid muscular support and thus beneficially influence the contents by changing the character of the container.

Mac Lean presents a new procedure, *"The Extreme Pendulus Abdomen and its Surgical Treatment by a New Three-flap Operation" (Surg., Gyn. and Obst., Feb.,* 1919). He laments any reference to this subject in the ordinary text books, gives due credit to the work of Blake and Mayo in developing the double-flap operation for umbilical hernia, but does not believe that these procedures are of use except in the less marked types of the condition.

Pendulous abdomen is usually seen in women who have gone through repeated pregnancies and in whom the panniculus adiposum is especially well developed.

The author bases his operation upon sound anatonical facts found in the arrangement of the aponeurosis of the linea alba. From 1½ to 2 inches above the symphysis publis where the recti muscles decussate and are reinforced by the triangular fascia of the abdomen and the pyramidales muscles, the wall at this point is extremely strong. In no case was the stretching of the linea alba found to have passed below this point. Again at a point immediately above the umbilicus the linea alba appears to be very dense and unyielding. In all the cases observed, a well defined line of demarcation existed between the stretched part and the part above the umbilicus which had not given way. This point appears to be at the lowest linea transverse of the recti muscles, and is situated just above the umbilicus. The maximum lateral stretching in all the cases seen was at the semi-lunar folds of Douglas. If an opening is made at the umbilicus and the hand inserted into the abdomen of one of these huge pendulous cases, a definite internal ring can be felt which might be compared to the internal ring of an ordinary hernia. The stretching of the structures which at first appears to be universal is entirely limited to a definite area with distinct anatomical boundaries.

Preparation of the patient for operation should have as its aim the reduction of intra-abdominal pressure to a minimum, and the disinfection of the moist and foul skin.

Operation: Two long incisions forming an eclipse are made from one side of the abdomen to the other, the upper passing above the umbilicus, the lower passing about two inches above the fold where the abdomen hangs over the pubes. Skin and fat are dissected away from the external oblique aponeurosis until the ring of the umbilicus is met. The abdomen is then opened at the umbilicus and the mass dissected away from the umbilical ring. The part of the abdominal wall which has given away can be lifted up in the form of a cone with the umbilicus forming the apex—this cone is the internal ring of the protusion.

Two lateral incisions are now made from the umbilical ring to the inner margins of the recti muscles. A third incision is made from the umbilical ring downward to the firm lower margin of the "internal ring," the point where the recti muscles decussate. Three flaps are thus formed, two lower and one upper. The two lower flaps are overlapped from side to side thus reducing by one-half the space between the recti muscles. After stitching the edges with chromic catgut, the upper flap is drawn downward and spread over the lower double flap and its margin stitched to the aponeurosis of the external oblique.

Hernia.

A number of articles have directed attention to certain phenomena of hernia, and suggested certain improvements in the operative technique.

Mac. Lennan, *"On the Presence of Adrenal Rests in the Walls of the Hernial Sacs" (Surg., Gyn. and Obstet., Oct.,* 1919) has noted the presence of small nodules in the walls of the sac. These nodules are minute, not being larger than ⅛ inch in diameter, embedded in the wall of the sac near, but not attached to the cord. They appear as brownish-yellow flattened spherical particles having a pearly appearance. They require to be differentiated from fat lobules which they superficially resemble. The sacs on which these rests have been found have been, with one exception, typically so-called acquired ones; the one exception being congenital hernia. The interest in this observation, besides the embryological one, lies in the support which it gives to the saccular theory of hernia.

Pitzman, *"Suggested Step in the Technique of Inguinal Herniotomy" (Surg., Gyn. and Obstet., March,* 1919) discusses the old problem, whether the sac causes the hernia or the hernia causes the sac. The author believes that hernia is caused by greater intra-abdominal pressure than the particular wall can withstand: that under such circumstances a hernia forces its way out through the musculo-aponeurotico-fascial layers of the abdominal wall; and that the *hernia causes the sac in absolute contra-distinction to the older opinion that the sac caused the hernia.* This question of theory is the foundation on which the suggested step in technique rests. The author does not approve of the usual custom of resecting the sac and closing off the peritoneal cavity before proceeding to the repair of the musculo-aponeurotico-fascial layers of the abdominal wall. He suggests that the mattress sutures for the repair of the abdominal wall be inserted while the peritoneal cavity is still open. With the finger introduced through the abdominal ring, the strength and character of the tissues forming this ring can be accurately determined and the sutures carried through all the layers of the abdominal wall at appropriate points. The author lays so much stress on the repair of the abdominal wall, and so little on the sac, that there is serious doubt as to whether it is necessary to pay any further attention to it, once the abdominal cavity has been opened.

The most important contribution to the operative technique of inguinal hernia is made by Franz Torek. *"Inguinal Hernia" (Annals of Surgery, Vol. LXX, No. 1),* an operative method by which close to 100 per cent. cures have been obtained.

The salient points in the technique of the operation are the following:

1. Clean separation of the vas deferens and the blood vessels of the cord from each other as well as from the sac by the removal of all the connective tissue that binds them together, *allowing the vas to come out at the bottom of the opening in the transversalis fascia and the vessels to come out at the top of it,* while the stump of the sac sinks back between the two. *A couple of stitches uniting the muscles to Poupart's ligament keep the vas and vessels permanently separated at the site of the internal ring.*

2. Below the vas, suturing of Pourpart's ligament to the internal oblique and transversus muscles, and after to the rectus muscle, is continued all the way down to the insertion at the pubis. This is of importance in order to avoid recurrence in the shape of a direct hernia, as well as for the repair of one already existing.

3. The employment of non-absorbable suture material at those parts where there is tension, the author's preference being silver wire.

Comment: The author's technique is founded on sound anatomical principles. The separation of the blood vessels and vas deferens within the abdomen causes them to approach the ring in opposite directions, the vessels approaching the ring from above downwards, the vas from below upwards. At the point where they meet is an open wedge through which the protrusion forces its way out, i. e., between the vas and the vessels.

The object of the author's operation is primarily the recognition of this separation of the vas and the vessels and the maintainence of this arrangement in the repair by the establishment of a firm square buttress of abdominal wall between vas and vessels, the buttress consisting of internal oblique and transversalis muscle with its fascia on the one side sutured to Poupart's ligament on the other.

We believe that this suggestion recognizes an important anatomical fact and is a real step in advance of the customary technique. The use of silver wire will not receive general approval, for the efficiency of a suture is dependent upon the structures to which it is applied, and not upon its own inherent strength.

H. M. Richter and J. R. Buchbinder *(Jour. A. M. A., Dec.* 6, 1919), describes an interesting technique in *"The Omission of Drainage in Common Duct Surgery."*

The prevailing opinion among surgeons is that once the common duct has been opened the future safety of the patient depends upon free drainage. The authors believe that the technique which they describe renders the procedure feasible in nearly all cases.

They believe that the common duct unobstructed makes an ideal drainage tube in itself, and the most satisfactory method of draining the affected parts above.

The details of the technique are as follows:

The duct is exposed in the usual manner; it is palpated for stones; the duct is then incised in the supraduodenal portion. For determining the potency

a scoop or curet is more satisfactory and should be passed through the duct into the duodenum. Transduodenal cholecystectomy remains, however, the safest method of determining the condition of the distal end of the duct, when there is doubt concerning its condition. The orifice having been found it is slit open to permit the removal of stone or to correct a stricture. It should be emphasized that the opening of the duodenum is a relatively safe procedure, and should be resorted to more frequently. An overlooked obstruction in this portion of the duct would be a fruitful cause of back leakage through the line of sutures in the duct above.

The patency of the duct being thus assured, and only under these conditions the common duct is carefully sutured with the finest needles and suture material obtainable; capillary leakage through the line of suture must be a constant accompaniment of the ues of ordinary suture materials.

As the result of a series of experiments it was found that human hair used with the finest cambric or bead needles, obtained the conditions most to be desired in intestinal suturing: 1. The immediate strength of the line of suture as determined by hydrostatic tests was greater than when a heavier suture was used. 2. There was no capillary leakage along the needle perforations. 3. The histologic sections showed the minimum amount of scar, an ideal condition.

Two layers of such sutures are used, one uniting the free edges, the other burying the first row. An essential part in the suturing of the duct is to include its peritoneal coat. No drain of any kind is placed in contact with the suture line any more than would be done in the case of a sutured bowel.

The authors have used this method on eleven patients, with one of whom only was the technique varied by placing a piece of rubber dam down to the duct. In the ten cases there was prompt recovery with a convalescence that was exceptionally smooth. In the one case in which the rubber dam was used, an accumulation of purulent bile developed on the third or fourth day and was evacuated, after which recovery was prompt. The authors do not believe that every common duct operation should be completed without drainage; it would not be safe in the presence of a virulent infection with severe inflammatory reaction present; nor can it easily be done when the duct is small. The authors offer these suggestions with the feeling that the one radical improvement in the technique of gall tract surgery is the omission of external drainage, and that a wider use of this method will demonstrate not only its feasibility, but also its comparative safety.

Comment: Every surgeon has erred on the side of inadequate surgery of the gall tract. Occasional unsatisfactory results occur in every large clinic; they are undoubtedly due first, to a desire to attain above all, the patient's safety; second, to the lack of confidence in a technique that warrants radical and rational explanation. Gall bladder surgery at any stage in its evolution is only a phase of the surgeon's skill; as this increases, so will the operative procedures represent a more highly specialized technique. Just as cholecystostomy in appropriate case has been replaced by cholecystectomy, so drainage of the common duct may be the introduction to primary closure without drainage. After all it is the personal equation of the operating surgeon that really counts. The technique described is for the surgeon who can apply it, its use must be necessarily circumscribed.

A. Bruce Gill, *"Dupuytrens Contracture, With a Description of a Method of Operation (Annals of Surgery, Aug.*, 1919), rightly appraises the treatment of Dupuytren's Contracture as tedious, difficult, and often unsuccessful. Even when temporary restoration of the hand has been secured, relapse has been common. The author's experience has proved to him the great value of the free fat transplant in preventing adhesions after excision of scar tissue and after extensive dissection. It has also demonstrated the advantages of making incisions along the line of the natural creases of the hand and fingers in order to secure healing of the wound without subsequent kelvid growth, contracture, and adhesion of the scar to the underlying structures. These considerations have led the author to employ the following operation:

1. Under general anæsthesia a transverse incision is made along the distal palmar crease. Through this incision alone a careful dissection is made of the entire palmar fascia to or beyond the crease at the base of the thenar eminence, as far towards the base of the palm as necessary, and to the web of the fingers. In this way the entire fascia can be exposed and freed within the limits mentioned.

2. The contracted fascia is excised without injury to the underlying tendons, vessels and nerves. The tendons do not require lengthening as they do not participate in the contracture.

If it is found that proximal interphalangeal joint cannot be extended and flexed again only with a snap, the head of the first phalanx must be excised through a transverse dorsal incision over the joint. Professor Hutchinson lays great stress upon the necessity of this procedure in long standing cases.

3. small free fat transplant from the thigh is inserted smoothly beneath the palmar skin. It will lie in position without sutures. It is placed here to prevent subsequent adhesions of the skin to the tendons and to reconstruct the normal softness and plumpness of the palm of the hand. Great care should be taken at the time of operation to prevent infection.

The author's operation is in accord with sound principles of plastic surgery and should be a welcome solution of a difficult and trying problem.

Duodenectomy.

Some interesting work has been done on the effects of duodenectomy: 1. To determine whether the duodenum is absolutely necessary to life. 2. To determine its role in the functioning of the gastro-intestinal canal.

Maun and Kanamura, *"An Experimental Study of the Effects of Duodenectomy" (Jour. A. M. A., Sept.* 20, 1919).

James J. Moorehead, *"Duodenectomy, an Original Technique (Chicago Surgical Soc., Surg., Gyn. and Obst., July*, 1919). As a result of Maun and Kanamura's experiments it was shown that duodenectomy in the dog, cat, hog, goat and monkey did not reveal any noticeable changes. Examination of the blood showed it to be normal with regard to cell counts, hemoglobin, carbon dioxid combining power, and hydrogen ion concentration. The roentgen ray showed the course of a standard barium meal to be practically the same as in a normal dog. Experiments on the other species have been too recent to allow conclusions to be drawn, but it would seem

that the removal of the duodenum in the hog is as innocuous as its removal in the dog. No data has been secured to show that the duodenum is of great importance in any of the species used.

Moorehead presents a preliminary report of work done on this problem describing a method by which the canine duodenum may be completely extirpated. He has found that dogs so operated on will live in a normal state of health. The duodenum is, therefore, not essential to life.

Thrombo-Angiitis Obliterans.

The discouraging yet fascinating disease of Thrombo-Angiitis Obliterans again is discussed by Willy Meyer, who discusses its etiology, *"The Etiology of Thrombo-Angiitis Obliterans (Medical Record, May* 31, 1919).

The author believes that it is a systemic disease and not, as Buerger claims, a primary affection of the blood vessels. The one etiological factor responsible for the characteristic syndrome is tobacco-smoke poisoning. The combined effects of the nicotine, pyridine, cyanic hydrogen, carbon monoxide, and other poisons contained in the smoke of tobacco, are responsible for all the characteristic clinical manifestations of the disease. All those affected from this disease should be advised to quit smoking, not merely reduce it, but stop it entirely. Once the system becomes thoroughly saturated with the toxic agents, mere abstinence no longer avails.

L. L. Mc Arthur presented to the Chicago Surgical Society, *"An Advance in the Treatment of Diabetic Gangrene (Surg., Gyn. and Obst., July,* 1919). He has used in diabetic Gangrene the treatment which Koga recommended for thrombo-angiitis obliterans and found the results excellent.

Mayesima, pathologist in the University of Tokio, showed in 1910 and 1911 that all cases of gangrene had an elevation of the viscosity of the blood, and acting on this suggestion Koga tried to reduce the viscosity of the blood.

In the Michael Reese hospital where the disease is frequently seen, results have shown that this preliminary treatment should always be tried before resorting to amputation, in any case of gangrene of the thrombo-angiitic type.

Koga found that by simply diluting the blood by hypodermoclysis with a thousand c c of ordinary salt solution, he could dilute and thus reduce the viscosity of the blood so markedly as measured by the viscometer that the author decided to try it in the gangrenous cases reported.

By using it once a day for two or three weeks, and then every other day, then two or three times a week, he secured some brilliant results. The procedure is simple but it is tedious. It means from ten to twelve weeks of treatment.

The earliest results obtained required forty-two days. The difficulty is in getting the patient to submit daily for three weeks to hypodermoclysis of a thousand cc under the skin of his breast, so MacArthur decided to administer the solution through the duodenum, using Rehfuss tube. By this means a litre of solution could be administered three or four times a day.

The author believes that Locke's and Ringer's solution is an improvement on normal salt solution, since the blood is not robbed of these chemical elements which can readily be incorporated by using the normal physiological solution of the laboratory.

In those cases where the X-ray picture shows that the arteries are perfectly calcareous pipe-stems the treatment is useless, as there is no chance of changing the circulation sufficiently to secure a favorable result. Prior to treatment, therefore, X-ray picture should be taken to determine the character of the vessels.

Comment: The Koga treatment is the only rational procedure yet suggested for these unfortunate patients. In addition, it might be well to adopt the suggestion of Meyer and forbid smoking, and modify the diet according to the sugar tolerance.

Sajous, *"Curative versus Symptomatic Treatment of Exophthalmic Goitre" (Medical Record, Sept.* 27, 1919) presents a philosophical discussion concerning the treatment of exophthalmic goitre which is well worthy of consideration by both surgeon and physician. As regards a "specific" the author observes that the many facts published in recent years showing that the malady may be the result of more than a simple etiological factor, tend clearly to indicate that the hunt for such a cure-all cannot bue continue sterile.

There have long been two main theories regarding exophthalmic goitre: 1. That it is due to excessive thyroid activity. 2. That it is a nervous disorder. Time has shown, however, that, as is often the case with strong and well sustained hypotheses, both were correct and more or less interwoven. Moreover, other ductless glands have been found to participate in the morbid process, the adrenals and thymus in particular.

The author contends that the various toxins originating from the intestines, pyogenic disorders of the tonsils, nasal and faucial cavities; peridental and gingival pyorrhea, gastroptosis with prolonged retention of ingesta, etc., may underlie the morbid process. When these disorders are carefully sought and as carefully eradicated, all symptoms due to hyperthyroidism improve and often disappear. These various sources of general intoxication obviously constitue the fundamental factor of the disease. It is in defending the body against intoxication that the thyroid body becomes abnormally active.

The observations of many physiologists, pathologists and clinicians have already shown: 1. That removal of the thyroid apparatus reduces markedly the antitoxic and bactericidal properties of the blood, and that these properties are restored by giving thyroid gland: 2. That the blood and urine are rendered more toxic by the removal of the thyorid apparatus, but that this unusual toxicity is removed by giving thyroid gland: 3. That animals are rendered more susceptible to infections by removal of their thyroid apparatus, but that they can be protected against certain toxins, particularly those capable of causing a febrile reaction, by giving thyroid gland.

Another etiological factor which elucidates many cases of exophthalmic goitre are due to terror or severe fright, particularly when associated with traumatism; here we are dealing with a toxemia due to impaired metabolism in these cells giving rise to toxic wastes which provoke excessive throid activity. Severe mental stress, fear, rage, deep grief, etc., causes excessive catabolism in the nerve cells and the excretion by them of highly toxic wastes, including neurin; these poisons, by provoking a defensive reaction of the thyroid, causes it to break down fats, including the faty components of the nevre cells, thus establishing a vicious circle, by perpetuating the catabolism of these cells and the formation of poisons.

The author suggests that primarily these patients require absolute rest to limit general muscular metabolism to the strict minimum, thus reducing the muscular wastes formed and also the labor of the cardiac muscle.

Secondly, he insists on appropriate foods, such as milk and its various products, a diet free from proteins and rich in carbohydrates.

Thirdly, thorough intestinal cleansing.

Comment: Too much ill advised surgery is being used in the treatment of hyperthyroidism. These patients require the most discriminating care. Surgery is indicated only after the removal of all sources of irritation is found futile.

Summary: To summarize surgical progress for the year 1919 it is fair to say that the Empyema problem is pre-eminent. The newer procedures developed through the exigencies of the war have flourished for a time; they have had their day; they have only served to emphasize the value of sound surgery and fundamental principles. There is to be noted some advance in the surgery of the gall-tract, and the technique of inguinal hernia. A ray of hope is also shed on the difficult problem of thrombo-angiitis obliterans; while experimental study shows that the duodenum is not essential to life.

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THE PROGRESS OF INTERNAL MEDICINE IN THE YEAR 1919.

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The year has not been notable for numerous epoch-making papers nor for startling conclusions based upon research. The advance has been chiefly in the direction of a better and broader knowledge of the real state of the science and progress of medicine. The internist working in his own particular field has been taken out of himself by the exigencies of war, brought into association with other groups, has had intensive training in modern laboratory methods and has seen the results of more accurate diagnoses and the effects of therapeusis upon large masses of individuals. He has reached an appreciation of the value of collective investigation in reaching decisions and his therapeutics has become fixed upon a broader basis. He has learned to value essentials and not to be unduly disturbed by the absence of the non-essentials. Progress in the healing art is predicated upon the advance of the individual in the practice of that art. The history of the world-disturbance demonstrates the advance of all departments into which medical science has been subdivided. But the advance, as shown by the greatly lessened morbidity and mortality is demonstrated to be in the domain of interval medicine; the advance in surgery has been real and substantial but that of medicine has been startling. It is needless to prophesy that those who have contributed to this scientific triumph, when again working under normal conditions, will play a prominent part in the history of American medicine. Their vision has become larger, their capabilities greater and, remembering their successes, their enthusiasm will impel them to greater activities for the future progress of internal medicine.

The gas bacillus infection which for more than a quarter of a century has perplexed clinicians is likely soon to be controlled. Ball and Pritchett of the Rockefeller Institute have demonstrated that the cause of death in *bacillus welchii* infection is not a blood invasion of the micro-organisms nor an acid intoxication, but an intoxication with definite and latent poisons produced by the growth of the bacilli in the tissues of the body and that this poison is a complex of an hæmolytic and another poisonous body still more toxic, acting locally upon tissues and blood vessels, causing œdema and necrosis, and in addition exerting a general toxic action, which may bring about death under conditions in which no blood destruction takes place. Having demonstrated that the toxic products of the growth of this bacillus exhibit antigenic activities and readily give rise to the formation of an active antitoxic substance, the next step was to determine if the immune serum would develop prosessed protective and curative properties. Their experiments would indicate that the development of the spores of this bacillus may be prevented by a protective inoculation of an antitoxic serum, and also that the vegetative bacilli may be deprived, by such serum, of their toxic products, which now appear to be their real offensive instrument.

The antitoxin developed by successive injections, into pigeons or rabbits, of the toxic filtrates from cultures of the bacillus in plain broth to which sterile pigeon or rabbit muscle has been added give rise to active immunity. The blood taken from these immunized rabbits is capable of neutralizing the toxic filtrate *in vivo* and *in vitro*. The filtrate has been designated as toxin and the immune serum as antitoxin, the latter neutralizing the former in multiple proportions, and, further, it neutralizes to the hæmolytic as well as the locally injurious toxic content. It has been demonstrated that the antitoxin is protective and curative against infection with the spores and vegetative stages of the bacillus in pigeons. The limits of the protective and curative action are being investigated with the prospect of a real advance in both prevention and cure of so-called gas gangrene. In man the antitoxin should be administered intravenously and probably locally, about the wound, as well. Later experiments would indicate that this antitoxin can apparently be prepared from a single strain of the organism which yields a high titer of toxin and can be employed successfully against the infection caused by any strain whatever of the bacillus.

An important group of diseases—the sputum-borne—which includes tuberculosis, pneumonia, influenza, tonsilitis, bronchitis, measles, mumps, scarlet fever, whooping cough, diphtheria and cerebrospinal meningitis, has received considerable attention during the year. These diseases are important not only in the number of those suffering from them but in the amount of disability produced by and, as well in the mortality resulting from them. The widespread of tuberculosis, active and potential, demonstrated by extensive and careful investigation, impresses the profession with the great importance of segregation of these unfortunate patients and their education both for their own sakes as well as of the community at large. Lobar pneumonia still remains the "captain of the men of death." In the classification of Dochez and Avery about two-thirds fall under types I and II, about equally divided, while the mortality is somewhat higher for the latter type. The carriers, who have not been exposed to a patient suffering from the disease, more than

one-half of them harbor organisms of low virulence (type IV).

The sera which have been introduced for treatment of this disease have not met previous expectations. It is chiefly effective against type I, the polyvalent serums are equally valuable against this type and do no harm in the other types. If the serum should, as an extreme argument, save all of type I it would not prevent fatalities in more than double the pneumonias of the remaining types. Unless sera are developed that are effectvie against pneumonias of other types, measures to reduce the incidence of the disease are the more important. Preventive measures must be emphasized, among others inoculation. A vaccine against types I and II is quite possible and this should be put into operation at the earliest possible moment.

Broncho-pneumonia, also caused by the pneumococcus, sometimes by the influenza bacillus, Friedländer's bacillus, or streptococcus, considered apart from the pneumonia which is a sequel of measles, is relatively not so important either in incidence or mortality.

Influenza is so markedly infectious that its prevention goes beyond droplet infection and emphasis must be laid upon avoidance of contact with anything which has been soiled by the infectious secretions. The real incidence of influenza probably can never be accurately determined because its differential diagnosis from a severe cold is a matter of careful bacteriological investigation. Foster is of the opinion that the latter is caused by a filterable virus although many organisms may be present.

Tonsilitis is frequent and more serious than its death rate would indicate because so many systemic infections are acquired by way of the tonsils. Especial attention has been attracted to the spirillum and fusiform bacillus of Vincent's angina in so-called "trench mouth" and "trench throat."

Measles is important from its frequent complication, or sequel, pneumonia. Assuming that the cause is a filterable virus which is present from the outset in the buccal and nasal secretions it follows that these infections are present throughout the whole course of the disease, being most infectious about the appearance of the exanthem. Sunlight and air appear to be the most valuable means of disinfection. The pneumonia, if lobar is pneumococcic, or, as far more frequent, if lobular is caused by hæmolytic streptococci. These streptococci are frequently found in the throats of patients suffering from measles. In nearly all empyemas one finds the same streptococci in the exudates.

In mumps we have probably a filterable virus in the saliva which is most infectious during the first three days of the disease and probably loses its power of infection at the ninth day.

Scarlet fever is caused by an unknown organism but the source of this is probably the secretions of the nose and throat; the main source of infection, then, is the patient himself through these secretions.

Whooping cough, caused by the small bacillus of Bordet and Gengou, is most infectious during the catarrhal stage, which is previous to the establishment of a clinical diagnosis.

Diphtheria, caused by the Klebs-Loeffler bacillus, needs no comment except that the bacillus withstands drying and soiled objects may retain their activity for a considerable time.

Cerebro-spinal meningitis, caused by the rather widely distributed meningococcus, should be regarded as an infectious rhino-pharyngitis in which the menings become involved in from ten to twenty per cent. of the patients. The meningococcus is of several different strains, which may be classified in groups, as normal, intermediate A, intermediate B and para-meningococcus (Rockefeller Institute). The dessemination is exclusively by carriers and fortunately relatively few individuals are susceptible to the disease. Unfortunately, however, the treatment of these carriers is very unsatisfactory.

In prevention of sputum-borne diseases droplet infection must be rendered impossible. But droplets are not usually conveyed through the air to a greater distance than three feet, so that an observance of this distance obviates infection. Of those infectious agents which are not destroyed by dessication and sunlight, objects contaminated by them must either be avoided or the objects sterilized. Cold and fatigue are frequent and predisposing factors in the incidence of disease, education must be extensive and effective as to the dangers inherent in acts of sneezing, coughing and particularly spitting. Excessive dryness of the atmosphere in producing susceptibility to cold and dryness and irritation of the respiratory passages is a factor to be taken into consideration. Vaccination against pneumonia affords hopes of success which can only be assured if demonstrated by experiment and observation. Protection against streptococcic infection does not appear to be probable because the streptococcic infection itself does not confer immunity. This abstract of the valuable work of Vedder (Welcome prize essay) places emphasis upon the importance of the general methods produced for the reduction of all sputum-borne diseases.

We appreciate the excellent synopsis of some facts and principles of dietotherapy by a practical exponent of internal medicine. Cornwall insists that first of all one should have due regard for that fundamental and universal principle of dietetics, the principle of adequate nutrition. A diet to be adequate must be properly balanced. The so-called caloric feeding is not necessarily adequate. Even sufficient qualities of proteins, fats, carbohydrates, salts, vitamimes and water may not constitute an adequate diet because the various food principles themselves may require internal balancing, which is particularly true of the protein ration. The balanced diet requires that its protein, or a considerable portion of it, be protein which parallels the body needs, as regards the amino-acids, which it supplies, practically animal flesh, eggs and milk, in considerable quantity of one or other of these articles. In the fat ration the soft fats and oils should largely predominate, and, although not necessary, some butter fat is desirable because of its easy digestibility, vitamine content and agreeable taste. The balancing of the carbohydrate ration is easily accomplished with starch occupying the first place, except in the diet of infants. Sugar occupies an inferior place, particularly for invalids, because it is susceptible to great fermentation. Besides all sugars, if taken in large quantity, may overtax the glycogenic function of the liver. The balanced ration of salts usually takes care of itself, with the addition of sodium chloride, which may not be absolutely necessary but is certainly conducive to comfort. The diet should include a considerable amount of fresh vegetables or fruits, or milk, all of which are particularly rich in the salts

needed by the baby. Iron may be supplied by adding to the diet the isolated element or one of its salts, or by increasing the amount of the natural articles of food which are rich in this element. Calcium is also important and its most available source is milk. Of fundamental importance is the maintainance of the alkaline reserves of the body. The balanced ration of vitamimes can be obtained from whole wheat bread, butter, green vegetables, potatoes and fresh fruit in fair amount or in a large quantity of milk.

Another principle is that of the easy diet which reduces the necessary wear and tear of adequate nutrition to the minimum practicable in the particular individual and is based upon the quantity and the quality of the food and the matter of idiosyncracies and special sensitization must be considered.

The principles above enumerated are of universal application. Those of temporary starvation and suralimentation have but a limited range of application and, if carried to an extreme, are capable of much harm. Palatability and variety of food should not be neglected but should be sought within the limits set by the more important dieto-therapeutic considerations.

Beates, Jr., in treating chronic heart lesions, believes that the fundamental principle upon which their therapeutics must be constructed consists in maintaining a mean pressure between the arterial system, on the one hand, and the venous on the other, and if this is maintained it secures the normality of intercellular fluid. The *sine qua non* then, is the restoration and maintenance of the circulatory equilibrium; since the processes of growth and development are involved, treatment must be continued for a long period of time before achievement of the ends in view can be secured.

Empirical medicine has established the fact that there are glucosides contained in the plant digitalis that are capable of restoring the equilibrium with greater certainty than is possible by any other means. He prefers the soluble amorphous digitoxin, named after its discoverer, Digalen-Cloetta, which, even in large doses, is almost free from provoking gastric disturbances. In brief, all myocordial degenerative processes resulting in loss of circulatory equilibrium and culminating in cardiac failure, if subjected to this active principle, and its administration continued as indications require, can, in their incipiency, be postponed; later, controlled and circulatory equilibrium maintained for many years longer than it would be under other methods. Thus premature invalidism is kept in abeyance for a number of years, and comfort and a useful life secured.

Many years have elapsed since we studied the reports of the careful experimentation of Masius upon digitoxin. His conclusions were so much at variance with the accepted theories of that time as to the action of the various glucosides of digitalis that the practical employment of digitoxin was begun with much misgiving as to the results which were likely to be obtained. The present eligible form of digitoxin and the possibilities of its larger use have placed the treatment of chronic cardiac lesions upon a satisfactory foundation.

Blood transfusions have an important place in the therapeutics of internal medicine. The method of transfusion of unmodified blood by the syringe-cannula system devised by the lamented Lindeman is based upon a consideration of the important factors, which are essential in the proper transplantation of blood. These are: (1) The method must be applicable to any patient and in any disease; (2) it must be possible to transplant any amount necessary to obtain the most desirable clinical results; (3) the blood must be transplanted exactly as it exists in the donor, namely, in its natural state. To accomplish the last of these essentials it must (1) pass through a minimum amount of foreign material; (2) be out of the body of the donor and into that of the patient in a minimum length of time, and (3) it must be free from reactions. The causes of reactions in blood transfusions are recognized as due to (1) hæmolysis and agglutination; (2) toxic substances developed in the blood on remaining outside of the body; (3) use of chemicals such as anticoagulates and physiological sodium chloride solutions and finally, (4) sensitization and anaphylaxis. In reviewing the literation upon the citrate method in the light of its recent use it must be concluded that sodium citrate produces changes in the blood, or allows changes in the blood to develop, which cause chills and severe reactions; and in addition the amount of blood which it is possible to introduce into the patient is limited. In instances in which repeated transfusions are necessary, each transfusion should be done as nearly perfectly as is possible, in order to avoid (1) disturbance of the labile elements of the blood and (2) the sensitization of the patient to subsequent transfusions. This life saving measure is useful not only after hæmorrhage but in many other conditions, such as the various anæmias, septicæmia, carcinosis, Banti's disease, hæmophilia, leukæmia, tuberculosis, leprosy and others. There often require repeated transfusions and necessitate the most effective method of transfusion that is possible because there is, in addition, a serious disease which endangers the life of the patient.

A REVIEW OF THE PROGRESS OF GYNECOLOGY AND OBSTETRICS FOR THE YEAR 1919.

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The past year has not witnessed any great advances in either obstetrics or gynecology; for war surgery and the lessons learned from group medicine, in the large army hospitals, have occupied the minds of the greater part of the profession. Yet in reviewing the progress made in our specialty, much of real value has been contributed from the American clinics, which have been trying to solve some of the problems of civil life and their relation to better obstetrics and gynecology.

The value of pre-natal study and its effect on labor and the new-born child, and the cancer problem, make up the larger part of the progress made in the diseases and conditions peculiar to women. Cancer, as usual, has shown an increase in its incidence and while nothing new has been contributed to its etiology; its treatment by the application of radium has been established.

Uterine Cancer: Levin and Joseph have shown that radium may deeply impair the proloferating power, and, consequently, the clinical malignancy of the cancer cell, even without producing any change in the morphological appearance of the tumor.

The first effect of the gamma rays on the malignant tumor, is the inhibition of the proliferating pow-

er of the cell, virtually rendering the cancer cell sterile. This in turn is followed by the degeneration and destruction of the cancer cells, and the formation of sclerotic connective tissue.

Levin has made one clinical observation which is worthy of note, i. e., that in cases in which an attempt at radical operation has been made and the growth not entirely extirpated; recurrence has occurred with greater rapidity, and with greater malignancy, than in those cases in which no operation has been attempted and only radium treatment given.

Comment: From these observations, and those of the author's it is safe to conclude that in uterine cancer of questionable operability, pre-operative radiation of the growth, with large amounts of radium, followed by a sufficient interval of time to allow for the subsidence of the para-uterine tissue edema and sterilization of the cancer cell should be routinely employed; for in this way many inoperable growths may become operable, and operative removal of the tumors may follow and this extirpation in turn should be followed by post-operative radiation of the pelvic tissue.

Clark again calls attention to the excellent palliative results from radium in the so-called inoperable cases. He reports one hundred inoperable cases treated, with local healing of the cancer ulcer in fifty-two per cent. This means that in fifty-two women with cancer of the cervix, in which extension had extended to the parametrium, with the symptoms of hemorrhage and fetid discharge from tissue necrosis; the vaginal wall has healed over and buried the growth, thus ridding the woman of the symptoms of bleeding, fetid discharge, and the effects of septic absorption.

Analyzing his report still further, we find that sixty women were completely relieved of hemorrhage. There was a recurrence of the bleeding in ten, and in only four was it uninfluenced by the radiation. Fetid vaginal discharge was checked in fifty-one and uninfluenced in fifteen. Of those suffering from severe pain twenty-three were relieved. Certainly these are remarkable palliative results, and the reviewers feel sure from their own experience that they can be duplicated by any surgeon who is willing to give every woman suffering from inoperable cancer, the benefit of radium treatment.

Unfortunately there is no way of determining beforehand which case will be benefitted by the use of radium. For it has been found clinically that there are certain cancerous growths; epitheliomatous, and adeno-carcinomatous, which are not retarded by radio therapy, and we have actually thought at times that the growth was accelerated by the use of radium. or should the economic value of radium be lost sight of. The hospital stay of the average patient following the radical operation, is not less than three weeks, and her convalescence takes another six or eight weeks. Hence it is ten weeks or three months before she is able to resume her household duties. On the other hand, three days to a week in the hospital will suffice for intensive radium treatment, and the patient is back about her work in a week, none the worse for her radiation.

In striking contrast to the end-results of the radical operation in cervical cancer, is the array of permanent cures recorded by removal of the uterus in adeno-carcinoma of the fundus. Hence radium has not been used in this class of patient, and surgery is the procedure of election.

William S. Stone has recently reported his results, which are based on a study of four hundred cases of cervical cancer, treated in the Memorial Hospital, New York, and on eighty cases under observation at the time of making his report. From this large mass of clinical material he concludes: *That in radium we have found an agent more peculiarly suitable for the arrest of the progress of the disease, than any other method that has been hitherto employed, and that it is more effective in primary lesions than in the cancerous recurrence following operation.* He feels that any interference with the nutrition of a tumor is an important factor in the result in radium therapy. A bulky and necrotic tumor never shows any improvement from radium treatment; *and in lesions with an ulcerating crater, radium may cause the premature production of rectal and vesical fistulæ.*

The changes produced by an effective dose of radium take place slowly. At first, the tissues become edematous and softer, and the parametria immensely swollen, The discharges are temporarily increased, but by the third or fourth week after radiation, the extra-uterine lesions are less well defined, while the pain and discharge gradually diminish, until within two months little, if any, tumor tissue can be felt, and it is not infrequent after two or three months to find only an atrophic uterus fixed in bands of fibrous connective tissue.

Stone's opinion coincides with the clinical experience of the author's; in the fact that radium will convert many border-line lesions of the cervix, or those in which the growth is largely limited to the uterine wall, into operable lesions—or without surgery. it will in many cases affect a disappearance of every gross evidence of the disease, and restore health in a number of such lesions more effectively than surgery has ever been able to do.

In Bailey's paper, which is based upon his experiences with radium also at the Memorial Hospital, New York, he states that recurrent cases have shown the lowest per cent. of improvement. This he attributes to the fact that recurrence usually takes place behind the vaginal vault; and in radical operation, surgeons generally remove too much of the vagina, hence the vaginal tube is actually shortened and this prevents the operator from placing the radium in direct contact with the diseased areas.

Comment: These observations would suggest that in doing the radical operation, the operator should be less generous in removing the vaginal wall, as the superficial portion of the growth can be well taken care of by massive radiation.

Bailey agrees with Kelly, and this also is in accord with the writer's experiences, *that preliminary cauterization interferes with the effectiveness of radium,* and that the best results are obtained through cross-firing the tumor from within and from without the body.

In the light of the repeated invasions of Percy, relative to his actual statistics from his cautery operation in cancer, it would seem wise for us to place our reliance on radium, rather than upon the cautery which unfortunately has no peculiar selectivenesses as has radium in the matter of tissues.

Radium in Fibroids: The position of radium in the treatment of uncomplicated fibroids and the myopathic hemorrhages from the so-called fibrotic uterus, is now fully established.

Kelly reports two hundred and eleven cases of uncomplicated fibroid treated with radium. In eighty-

seven cases the tumor entirely disappeared; fourteen are symptomatically cured, though a tumor remains, while in sixty-two the tumors have definitely diminished in size.

It is foolishness to regard radium as a panacea in the treatment of all fibroids; for clinical experience has shown that certain underlying principles must be recognized before instituting treatment with radium in fibroid tumors. First, the fibroid must be uncomplicated; intramural or submucous in position, and malignancy should be excluded by a diagnostic curettage. Second, all inflammatory conditions of the tubes, ovaries, parametrium, and pelvic peritoneum, must be excluded by careful pelvic examination under anesthesia; for radium will excite an exaccerbation of a para or periuterine inflammatory process. Baily concludes his excellent paper based on a five years' experience with the statement that radium is the treatment of choice in uncomplicated fibroids, where the tumor is within the confines of the uterus.

Watkins, Miller, and Clarke add their endorsement to Kelly's enthusiastic claims. Miller has reported twenty-six cases of uterine myomata treated with radium. In twenty-two, the bleeding ceased within five weeks after the first application and did not return; and in sixteen who were examined from three months, to two and a half years after the treatment, there had been a definite reduction in the size of the tumor varying from its complete disappearance in three cases, to about one-half of the original size in practically fifty per cent. of the number.

In order that we may compare results with those obtained from operation, we quote from Broun's paper these excellent results in 1,500 selective cases of uterine muomata operated in the Woman's Hospital from 1910 to 1917. In this series twenty-eight patients died—of these seven died from embolus between the eighth and twentieth day after operation; seven died from peritonitis and the remainder from various causes, making a mortality rate from the series of 1.86 per cent. Thus the relative safety from operation has been established. From this review Broun concludes that the use of radium, and the X-rays, should be limited to cases in which it is advisable to do any form of operation owing to complicating system disease, and to hemorrhages of myopathic origin, or from small and absolutely uncomplicated fibroid tumors of the uterus.

Prenatal Care of the Woman: Few subjects are of greater importance not only to the medical profession, but to the American people at large, than the question of obstetric skill and care. Fortunately, through the efforts of Hirst, Williams, and others, the public is beginning to recognize the economic value of prenatal care. Prenatal care may be defined as preventive medicine, applied to obstetrics and should be considered along with present day advances. The obstetrician of today must show more interest in a given case than merely being present at the delivery, and leaving immediately the placenta is expressed.

Obstetrics of today as taught and practiced in the fullest interest of all concerned, constitutes more than the services of the medical attendant begun at the onset of labor, and ending with the delivery of the placenta. There are born in the United States each year about 2,650,000 babies. In this number some 15,000 maternal lives are lost annually; and in addition thousands of women are left with impaired health due to the accompanying accidents, traumatisms and complications. 150,000 mothers give birth to full term dead babies, and during the first four weeks of life 115,000 babies die, making a total estimated infant mortality including still-births, during the first month of 280,000.

Yet some of us, and a large part of the public, still maintain that pregnancy and labor are normal and physiological processes. To this we cannot subscribe, for prenatal clinics in connection with the obstetric services in hospitals, maternity centers, and the betterment of rural obstetrics by post graduate instruction, and the excellent work of the U. S. Department of Labor and Child Hygiene, have done and are doing much to limit this wanton waste of human life.

At the Long Island College Hospital, we have seen the effect of careful and detailed prenatal work on our infant mortality. During the past year, 1,150 women who have been cared for in our prenatal clinic, have been confined in our service. 659 in their homes by our senior students; with a still-born mortality of 9/10 of one per cent. The remaining 481 women were confined in the hospital with 2 per cent. of still-births, making a total of still-birth delivery of 1.7 per cent. If we include the babies dying during the first two weeks following delivery, the infant mortality of the in and out-patient service in cases receiving prenatal care amounted to 3.6 per cent. While difficult labor can be anticipated by mensuration of the pelvis, eclampsia prevented by appreciation of blood pressure, and infection avoided by routine rectal examination, obstetrical accidents cannot be foretold. However, if we are cognizant of the possibilities, we are able to cope with them.

Morse has shown what an important part extreme tortion and lateral version of the uterus plays in the etilology of the premature separation of the normally placed placenta. In his experiments he found that by tying the entire venous blood supply on one side of the uterus, he could produce separation of the placenta and found the veins thrombosed. Gross and minute study of the uterine tissues in the placental site showed hemorrhage into the muscle bundles, and between the fibers, similar to the picture previously described by Williams in his study of two uteri removed for accidental hemorrhage.

During the epidemic of influenza, 1918-1919, there were some 400,000 individuals who lost their lives from this dreadful scourge. Amongst this vast number there were many, and it would be impossible to say just how many, pregnant women succumbed.

The obstetrician came to look upon the influenza as an extremely dangerous complication of the pregnant state, especially during the last trimester of pregnancy.

Of the many statistical papers that have been published, perhaps the most important one is that of John W. Harris, from the Johns Hopkins Hospital service. This includes a study of 1,350 cases of influenza occurring in pregnant women; in this report we find that about half of the influenza cases develop puneumonia and that 54 per cent. die. The highest mortality occurs in this complication at term; the mortality in this series reached 61 per cent. Where the pregnancy was allowed to progress without interference the mortality was 41 per cent., whereas in those cases in which the pregnancy was interrupted in one way or another, 63 per cent. of

the mothers died. In this series pregnancy was interrupted during the course of the influenza-pneumonia in 52 per cent of the cases. If we include all cases of influenza and pneumonia, the gross maternal mortality is 27 per cent., hence we see that the complication of influenza-pneumonia in pregnancy is the dread of the obstetrician. From our personal experience in the management of pregnancy and labor complicated by influenza-pneumonia, we have come to the following conclusions:

1. That pregnancy complicated by pneumonia particularly from the seventh month to term is a very serious proposition, the mortality ranging from 50 to 75 per cent. for the mother, and from 40 to 60 per cent. for the fetus.

2. That by the free use of morphine it is very often possible to prevent the onset of labor in these cases.

3. That once labor begins morphine should be freely used and delivery accomplished as early as possible.

4. That at the time of delivery forceps are to be applied; the morphine analgesia should be supplemented by gas-oxygen anesthesia, and finally that induction of labor or abortion is not to be considered, except in very special instances where extreme obstetric emergencies must be met.

At last the status of the uterine curet, and the operation of curettage, seems to have been put where it belongs by Rawls statistical paper reviewing the operation of curettage, as done in the Woman's Hospital. We are entirely in accord and most heartily endorse his conclusions which are as follows:

1. About 96 per cent. of gynecological cases show no endometrial changes and therefore curettage is not indicated or necessary.

2. In about 4 per cent. showing endometrial changes the procedure is of questionable therapeutic value.

3. As a diagnostic measure it is of practical value is only 5.1 per cent. of the cases of carcinoma of the uterus.

4. When curettage is performed in a hospital by skilled operators there is a morbidity in at least 5.5 per cent.

In the face of these facts it would seem that the curet and the operation of curettage, for the occasional operator or general practitioner, should be looked upon with fear and trepidation; and that the specialist in obstetrics and gynecology should use it with considerable deliberation.

Another obstetric problem that deserves mention is the rapid increase in the frequency of supra-pubic delivery; the relative indications for cesarean seems to get broader and broader, day by day, and while we feel that supra-pubic delivery in the hands of the skilled operator is less dangerous than an infra-vaginal delivery with the forceps in the hands of the average medical man, we know that section has a definite mortality. DeLee and Beck have called attention to the advantages of the low incision and peritonealization of the wound in the uterus by covering it with the bladder reflection. This was suggested by Kroenig and Doderlein but Beck has materially improved the technique.

By Beck's technique it is possible to operate in a class of "suspect" cases with reasonable safety—for the wound in the lower segment of the uterus is completely covered with the peritoneal reflection. It is well known that in the majority of instances the infection comes from the inside of the uterus—commonly through the hysterotomy wound or a stitch hole, this leads to a peritonitis—in the low operation the wound is covered and sealed by peritoneal adhesion in a few hours. So that any infection from the interior of the uterus cannot do more than infect the parametric tissues and form an exudate, instead of a spreading peritonitis.

PROGRESS IN DISEASES OF THE NOSE, THROAT AND EAR FOR THE YEAR 1919.

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The time since demobilization of our troops took place has been too brief for many writers in the line of nose, throat and ear diseases, who have been in the service, to contribute very extensively to the medical press. But, as compared with the paucity of the literature produced by our English cousins during the past year, our own activities have resulted in a surprisingly voluminous mass of contributions to American periodicals. While there have been no startling revelations in our field of research during the past year, the character of the work generally bears the stamp of advanced scientific methods and portends a genuine progress as they are applied in practice.

In the representative articles which we have selected to review, there will be found an important warning with respect to the dangers attending injuries and operations involving the nose. There are discussions regarding the wide range of infections eventuating from nasal sinus disease; interesting and promising experiments in the study of atrophic rhinitis (ozaena) and their practical bearing on successful treatment; blood examinations before operations, especially with the view to detect bleeders; the varying results of tonsillar operations; experiments upon aviators; complications of mastoid disease; the effects of toxic gasses on the larynx, etc.

A word of caution should be spoken relative to operations upon the middle turbinated body. A number of deaths have been reported as having followed operations upon this structure. While the reviewer has never observed such an unfortunate result, he has made it a practice to deal as gently with this tissue as possible. The following is a striking case in point:

Meningitis Following Operation Upon the Middle Turbinal.

A case was reported by T. J. Harris of a fracture of the nose by a football *(Journal of Laryngology, Otology and Rhinology, September,* 1919, *London)*, in which there was an obstruction from the right enlarged middle turbinated body. A cystic middle turbinal was removed, and the patient was dicharged from the hospital on the third day. On the next night he died. Autopsy showed acute fibro-purulent pneumococcic meningitis. There was a smooth round hole 5 mm. in diameter to the right of the crista galli, with a necrotic center.

A number of cases of meningitis and deaths have been reported following operations on the middle turbinated body, and this structure should not be attacked if it can be avoided.

Latent Sinusitis in Relation to Systemic Infections, Especially With Reference to Rheumatoid Arthritis.

In the London *Journal of Laryngology, Rhinology and Otology for July,* 1919 P. Watson Williams treats of the wide range of infections which may be

due primarily to infected nasal sinuses, and draws the following deductions:

"1. That a latent sinus infection may persist for a great many years. When one remembers that an infected sinus is an ideal physiological culture tube, provided polynuclears are inactive, the varying virulence of the infecting organisms correspond with the variations in the systemic infection.

"2. That chronic rheumatoid arthritis and other infective rheumatic symptoms may be due to a sinus infection.

"3. That appendicitis may be due to infection through the gastro-intestinal tract from a nasal sinusitis. A large percentage of sinus cases have suffered from appendicitis, but, though I believe that a nasal sinusitis is not rarely the source of the appendicular infection, I do not suggest that this is the usual source.

"4. That a very copious, or thick, purulent discharge, may be sterile, whereas a thin, opalescent, or almost colorless, discharge may yield a free growth of pyogenic organisms on culture.

"5. That the previous history of nasal sinusitis is worthy of careful notes.

"I suggest that some cases of systemic septic infection attributed to tonsillar infection may be due to a nasal sinusitis, which has caused the tonsillar infection with hypertrophy of the tonsillar lymph-tissue structures."

Atrophic Rhinitis (Ozena).

T. H. Benians and C. H. Hayton *(London Jl. Lar., Rhin. and Otol., Sept.,* 1919) gave the results of their study of the effect of liquid glucose in pure glycerin in the treatment of ozena. They refer to Benians' former article on this subject in the *British Medical Journal* for June 15, 1918, entitled "The Local Application of Liquid Glucose in the Treatment of Certain Superfiicial Bacterial Infections." As a bacterial foodstuff, glucose is in common use in the laboratory. Benians' object is to alter the nature of the substrate on which the invading bacteria are acting, and in that way render their products less harmful. In this way the infected region may be made more suited as a nidus for some innocent organism to inhabit and displace the pathogenic bacteria. In pursuing this method, he places emphasis on the following important considerations:

"1. Almost all pathogenic bacteria are capable of fermenting glucose; some of them, however, much more slowly than others.

"2. During fermentation a definite acidity of the medium is produced.

"3. Many of the bacterial toxic bodies, using the term in its widest sense, are formed to the greatest advantage in a definitely alkaline medium, and the production of these substances is in some cases distinctly inhibited by the presence of glucose; diphtheria toxin is an instance in point.

"4. Stinking discharges are in most cases due to tryptic digestion of proteins, and this is the form of enzyme action which can only go on to advantage in an alkaline substrate, and which ceases in the presence of even a slight degree of acidity. This form of digestion, as it may be called, is analogous to that which goes on in the intestine with the formation, among other stinking bodies, of indol and skatol. The formation of indol by bacteria is said to entirely cease in the presence of a very small amount (0.25 per cent.) of glucose. That, as a matter of fact, must depend on whether the particular bacteria ferment glucose rapidly, or whether they first commence to digest the proteins. Certainly, some bacteria, as those causing the foul smell in ozena, will produce a small amount of indol in the presence of considerable amount of glucose.

Benians proceeds to apply these principles to the treatment of ozena, among other diseases. Concerning ozena, he says: "This condition of fetid rhinorrhea is in most cases due to a massive infection of the nasal mucosa with a specific organism, the principal characteristic of which, as far as we are concerned here, is that it grows very freely in neutral broth, producing much indol and a very foul smell. It grows with difficulty in acid broth (+ 30 and upwards) and there is no smell and no production of indol. It grows fairly well in 4 per cent. glucose broth without any smell, and with a gradual production of acidity, and in this culture, as in the acid cultures, it rapidly dies out. A considerable number of cases of this condition have been treated by Mr. C. H. Hayton at my suggestion, both with glycerin and with glucose, by swabbing over the mucosa of the nose once or twice a day with a 25 per cent. solution (in pure glycerin), with the results that the secretions of the nose have become acid, and the specific bacilli have been, to a large extent, in some cases completely killed out and replaced by staphylococci and streptococci, the foul smell and the incrustation of the nose clearing up concurrently. I am at present only vouching for the principle of the method of treatment, which seems to hold the elements of success. The final results as to permanency of cure or mere alleviation of symptoms in these cases we hope to embody in a later paper. At present, glycerin has given the better results, probably on account of its special physical properties."

In the foregoing sentence, Benians evidently had in mind the use of liquid glucose in a 25 per cent. solution made with warm water, or made up in a gelatin basis.

The second paper which he promised is the one referred to as having appeared in the *Journal of Laryngology* for September, 1919, on the Glycophilic Method of Bacterial Selection" to combat the action of bacterial ferments. In this article Benians and Hayton agree that the bacillus mucosus capsulatus of Lowenberg does not produce the fetor, although the atrophy of the mucosa may be due to it, but that the offensive odor of ozena is attributable to the cocco-bacillus foetidus of Perez. The bacillus lives, apparently, on protein bodies, the destructive action on which is very rapid, and it will not grow in acid broth (+ 40).

The authors experimented with a 10 per cent. aqueous solution of liquid glucose in warm water in cases in which a spray or irrigation was preferred, but found the 25 per cent. solution of liquid glucose in pure glycerin more efficient. The crusts are removed and the solution is applied to every part of the infected membrane, at least four or five times a day, at first, and less often as improvement is observed. It may be necessary in cases in which the ozena is extensive to irrigate with the aqueous solution gently until all the crusts are removed, or to use a warm spray, and then to follow with the wool applicator carrying the glucose and glycerin mixture. However, Hayton deprecates "constant and continuous douching of the nose with aqueous

solutions," as tending to promote the extension of ozena to parts not already infected.

Ten cases are reported, in which the treatment was applied over a period of two years. The headaches, fetor and crusts disappeared, but the anosmia and atrophic condition persisted.

Purpuric Hemorrhage Following Adenoid and Tonsil Operations.

The occult dangers that lie lurking to ambush the surgeon, and that emphasize the necessity of eternal vigilance in detecting unsuspected perils that may not only thwart the most skilfull surgeon's efforts to benefit his patient, but may turn the tables to end the patient's life, are illustrated in the following experiences:

John F. Barnhill *(Laryngoscope,* October, 1919) reported a case of adenoidectomy and tonsillectomy, following which "there was no more hemorrhage than usually occurs. About six hours later, the boy began to bleed and continued to do so despite horse serum or any other method that was used. The horse serum had no effect, neither had coagulin, fibro-plastic. Transfusion was begun, first of the father's blood, which did not the least good, so far as could be determined, except temporarily. He found that the hemophiliac tendency had come from the father's side and not from the mother's, as usual. One hundred and fifty c.c. of the father's blood was transfused at one time, and 200 c.c. at another, no permanent relief following. The mother's blood was then used, and after three transfusions of 200 c.c. each, the child was in a safe condition. The case emphasized the importance of obtaining, if possible, the condition of the blood of the person acting as the donor in the transfusion.

Blood Examinations in the Surgery of the Nose and Throat.

Seymour Oppenheimer and Mark J. Gottlieb *(Laryngoscope, July,* 1919) state that there are many fatal cases of hemorrhage following operations on the lymphoid tissue of the nose and throat that are never reported. They explain that it is a lamentable fact that, of all those in the medical profession who operate, there are more doing nose and throat surgery with less knowledge of their anatomy than there are of those who invade other branches of practice.

Some operators give lame excuses, charging abnormal position of blood vessels, etc., when their fatalities are actually due to their carelessness in technique and inefficiency of the preliminary examinations of the patients.

They cite the case of an opera singer, who complained of a lymphoid mass at the base of her tongue, which interfered with her singing. Five years previously she had a tonsillectomy performed, after which she had some bleeding from the wound until it became necessary to ligate the carotid artery. The authors judged the bleeding not to be due to poor surgical technique, as the work had been done by a competent operator. The mass at the base of her tongue was removed, and on account of the hemorrhage that followed they had to remain thirty hours in attendance upon her. A blood examination showed the patient to be a hemophiliac.

They state that they have seen many different methods of performing the same operation, some of which should be criticized. In many cases the patients had not been examined previously, and have had recent acute infections. They mention 26 cases, which they saw operated upon at a certain clinic. In one case the nasal discharge was suspected to be that of possible nasal diphtheria. The invariable practice of controlling bleeding was by compression, and many patients left the operating table with the blood still oozing. Why should these surgeons leave their cases in a different condition from those operated upon by the obdominal surgeon, who ligates all bleeding points?

They discuss the subject of coagulation of blood, and state that the theory of Howell is probably the most generally accepted. Many methods have been devised for the estimation of coagulation time, but few are satisfactory. Some operators remove blood from a vein, others by puncturing the skin. The writers state that there are thromboplastic substances present in the tissues, and that removal of blood from a vein, or by skin puncture, does not give the same time of coagulability as that following an operation. A method is described for making the test. The skin is punctured by a needle having a knife edge, and the blood is sucked into a .2 c.c. pipette, such as is used for serological work. The pipette is kept at 37° C., and observed every two minutes. From time to time a small drop of blood is blown on a glass slide to determine whether coagulation has started. In 400 specimens so examined the coagulation time was 6.3 minutes for the average; one was 29 minutes, and the shortest, one and one-half minutes. The bleeding time was also determined by noting how long a skin puncture will bleed by gently squeezing the part from time to time. In 200 cases the average time was five minutes; the longest bleeding time was twenty-nine minutes, and the shortest, two minutes.

"Hemophilia and purpura are two conditions that should be carefully watched for before operating. Hemophiliacs should be prepared for operation by large doses of calcium lactate. In purpura the bleeding time is prolonged, but the coagulation time is normal, although the clot does not contract.

"Purpura is now supposed to be due to a diminution of blood platelets. The disease is not hereditary," They cite the case, though, of a child having purpura, where the same condition exists in the father. They think this might be due to a syphilitic degeneration of the blood-vessel walls.

As treatment, they recommend human blood serum, or, in its absence, diphtheria antitoxin. Transfusion of whole blood has also been practiced. In cases of hemophilia or purpura, the effect of these treatments is only temporary. Other substances recommended are coagulen, thrombokinase, and thromboplastin. Calcium salts are occasionally beneficial.

They suggest the possibility that the thyroid gland, or even the liver, may secrete an antithrombic substance or enzyme, which may be, in part, the cause of the deranged coagulative mechanism of hemophilic blood.

In conclusion, they remind the reader that these observations are published in order to show that more care is needed in examinations of patients before operations are undertaken.

Rhinophyma.

Gordon B. New cites a case of rhinophyma in the *Laryngoscope for July,* 1919. The condition is unusual, but is an occasional sequel of acne rosacea. The nose becomes swollen and covered with soft lobulated, nodular areas that are separated by deep fissures, and it may become very large.

Decortication of the nose is the accepted treatment, but is often too long delayed. New gives the history of a man aged 60, a hotel proprietor, and a moderate user of alcohol, coffee and tobacco. He came for examination January 3, 1919. There was a history of lues, gonorrhea and grippe. He complained of the large nose, pain in the right side of the abdomen and of gastric distress. An irritation of the nose, face and chest, which was becoming worse, had existed for 20 years. The nose had been treated, but without success. The pain in the right abdomen dated back four or five years, but the indefinite gastric distress had lasted for 15 years.

Acne rosacea extended over the cheeks, chest and back. The Wassermann test was negative. The abdominal distress was attributed to duodenal ulcer. January 10th, 1919, under ether anesthesia, a large mass of hypertrophied tissue was cut away with the knife from the dorsum of the nose. The skin covering the lateral portion of the nose was undermined, and some tissue was removed. The bleeding was slight. The margins of the wound were sutured in the midline. February 3d following, the surplus tissue was removed down to the frame work of the nose. Hot salt compresses controlled the bleeding, and after the first two or three days the wound was left open as much as possible. It took two weeks for the cut to heal.

Rhinophyma occurs mostly in men over 50 years of age. Alcoholism, dietetic disorders and exposure to inclement weather are supposed to be the etiologic factors. Microscopically the connective tissue shows hyperplasia, hypertrophy and increase in the number of sebaceous glands. The blood vessels are dilated. There is round cell infiltration in the connective tissue.

Complications and Sequelae of Tonsil and Adenoid Operations; Their Prevention and Management.

Harry L. Baum, in the *Annals of Otology, Rhinology and Laryngology* for March, 1919, emphasizes the necessity of guarding against operative hemorrhage by painstaking examination before operating, especially with reference to the presence of hemophilia. One should look for arterio-sclerosis, the anemias, leukemias and cholemias. The history of the case and the coagulation time of the blood are important, although the latter is not conclusive. In copious hemorrhage, transfusion must be resorted to. Normal serum, antitoxin, emetin and pituitrin may prove beneficial and may not.

Mechanical means are generally successful in controlling post-operative hemorrhage. Baum advocates the method of tonsillar operation by the use of the cold wire snare, "cutting from behind forward slowly and without preliminary dissection." He advises a minimum of dissection, and the least possible damage to adjacent structures. Any pulsating bleeder in the severed tissues should be crushed by the hemostat, which is usually effective, but the bleeding point may require to be tied with a suture ligature, carried by a curved needle and holder. The author regards these operations as strictly operations for the hospital, where they can be watched.

Baum seems to have been greatly blessed by having had few cases of profuse hemorrhage from adenoid operations. Thus, he has been spared many a stress and strain and heartache. The writer has seen numerous appalling hemorrhages from both adenoid and tonsil operations, but has been fortunate in never having seen quite a fatal issue.

The anesthetic, which Baum prefers, is warmed ether vapor in the hands of a skilled and experienced anesthetist. He cautions against local anesthesia by cocain, but says that novocain and apothesin have been very satisfactory in his hands for infiltration anesthesia. He does not use quinine and urea. The author says he operates with the patient in the horizontal position when employing general anesthesia. However, the reviewer has operated on a very large number of cases under ethel bromide with the patients sitting in the chair, with never a serious accident. If one operates with celerity, he has time to remove the adenoid growths and tonsils with no pain or perceptible shock.

Acidosis is combatted, with sodium bicarbonate and glucose per rectum or intravenously. He advises examination of the urine for acetone and diacetic acid. Post-operative pain is combatted by the application to the fossa of a solution of 15 grains each of cocain, menthol and phenol in one dram of alcohol, with most gratifying relief. He should have added an emphatic caution not to allow an excess of this cocain solution to be swallowed. The reporter has seen numerous instances of alarming toxic effects of cocain in nose and throat surgery, and knows of one death in the practice of one of his assistants from cocain applied to the throat, which occurred before the operation was commenced. On account of infections following the employment of deep injections for local anesthesia, Baum has discontinued their use. He refers to pulmonary abscesses, etc., which were cited last January in the MEDICAL TIMES in our report for the year 1918.

The disadvantages of tonsillectomy and the various accidents and unfortunate results are referred to, and they illustrate the superiority of the results of deep tonsillotomy, which leaves a small base of the gland to perform its natural functions and to keep the pillars properly separated. He mentions the extensive scar tissue, the contracting of which produces discomfort, the dryness of the throat, the constant desire to swallow and the occasional impairment of the voice which tonsillectomy produces, as well as the damage to the surrounding tissues. These results are not characteristic of tonsillotomy by a competent operator; yet, he appears to adhere to tonsillectomy.

Eustachian Tubal Function and Aviation.

G. Gradenigo *(Arch. Ital. do Otol.,* Jan., 1919) is quoted as follows: "Modern aviators are subjected to very rapid change of barometric pressure in rising and descending. One can descend from 6,000 meters in a few minutes with a difference in atmospheric pressure of 360 to 760 mm. of mercury.

Two colleagues were experimenting with an air-tight decompression chamber, when, by an error, they were decompressed in a few seconds to a degree corresponding with an altitude of 6,000 m. In response to their signals of alarm, the pressure was restored to normal again, also in a few seconds. Both victims suffered from violent pain in the ears and temporal region, grave asthenia, nystagmus, vertigo, subjective noises in the ears and hemorrhage from the mouth and nose. In both there was great hyperemia of the drum membranes, with petechial hemorrhages, and also effusion into the middle ears. A perforation was caused in one drum head. In most aviators whose Eustachian tubes were pervious immediately after descents of about 6,000 meters there

was no discharge in the ears. In a few, however, there were slight transitory dullness of hearing and slight hyperemia of the membrana tympani. Subjective noises were attributed to the roaring of the engine. Similar experiments in the decompression chamber showed that, if the tube is open, there is no damage to the ear from rapid changes of atmospheric pressure.

"The case was very different when the tube was not pervious. Acute pain in the ear was caused by changes of pressure in spite of movements of deglutition. In these cases there were marked redness and indrawing of the drum head, with minute hemorrhages in the drum head itself. There were diminution of hearing and vestibular symptoms which passed off after a few days.

Gradenigo comes to the conclusion that, for purposes of aviation, the best means of determining whether the tube is patent is by the use of the decompression chamber. By this, one can also determine the effect of respiration and circulation."

Bilateral Mastoiditis, Metastatic Abscesses, Recovery.

Dr. Otis D. Stickney, in an article on the "Report of a Case of Bilateral Acute Supurative Otitis Media with Symptoms of Sinus Thrombosis," in the *Laryngoscope*, February, 1919, cites the case of a woman 52 years of age, who had always enjoyed good heath, and who developed pain in both ears on June 24th. For a few days prior to this time she had a sore throat. The tympanic membrane ruptured spontaneously within 24 hours, and this was followed by a profuse discharge. On July 3d, the discharge from the right ear stopped, and it again became painful. On examination, the tympanum was bulging and red, no landmarks were discernable; there was no discharge in the canal, and no perforation was seen. The mastoid was tender, and her temperature was 102° F. The membrane was incised. The left tympanic membrane seemed to be clearing up, when it also became painful and was incised. On July 6th and 7th she had temperature and mastoid symptoms.

On July 8th, she complained of pain in the right arm and left ankle; was nauseated, restless, and complained of pain in the back of the neck. She slept little and had chills and sharp pain in both ears. Her temperature now was about 100.4°. Because of these symptoms, a bilateral mastoid operation was performed on July 12th with exposure of both lateral sinuses. Before the operation she showed a leucocytosis of 16,000 and a red count of 3, 300, 000. She was removed to a hospital, but subsequently had no recollection of the journey. A simple mastoidectomy was performed first, after which she improved somewhat. The sinus walls looked normal. On July 17th, the right elbow was incised and drained of about one ounce of pus. The following days the temperature varied around 99°. On July 23d, 50 c.c. of antistreptococcic serum was given.

From July 27th to August 3d, she had slight chills; her general condition became worse, and she looked septic. Her temperature varied from 100° to 103.4°. She had nausea and vomiting; no appetite and was becoming very weak. There was no visible swelling over the mastoid and there was no limitation of head movements. Stickney then felt that the patient had a double sinus thrombosis. On Aug. 4th the right mastoid was reopened and the right lateral sinus incised. No thrombus was discovered. The left side was then similarly treated. After the operation the temperature dropped to 98.8°, and no symptom of intracranial pressure was manifest. On Aug. 12th her temperature became normal. The packing was then removed and no bleeding resulted. From this time she made an uninterrupted recovery and her hearing became normal.

Abducens Paralysis in Acute Suppurative Otitis Media with Mastoiditis.

Otis D. Stickney reports two cases of this kind (*Laryngoscope*, July, 1919). The first was a girl 6 years of age, who developed an acute rhinitis on February 13th. One week later she had a severe pain in the left ear and high fever. In a few days the ear began to discharge. On March 26th the child was seen again, when she complained of pain in the left frontal region. Her mother said that was more severe when the ear did not discharge freely. The patient looked ill. On examination, the left external auditory canal was found to be filled with a greenish, foul-smelling pus and the tympanic membrane was perforated. The left mastoid process was slightly tender on pressure, but not swelled. Calomel and a saline laxative were prescribed. On March 29th the patient was seen again. The aural condition was about the same, but the discharge had diminished, and the odor was less offensive. It was also noted that the child had been closing one eye occasionally during the day. She explained that it was because she saw two objects. On examination, there was found a paresis of the external rectus muscle. She also had a pain in the left side of her head, and the temperature was 100° F. An intracranial involvement was suspected, and the left mastoid process was opened on March 30th by the simple operation.

The cells were broken down, and the cavity was filled with pus and granulations. The dura was found to be normal. On the following day the child showed improvement, and in one week the discharge had ceased. Complete recovery followed.

The second case was that of a woman 34 years old. She had had an atrophic rhinitis since childhood. The present illness began with influenza on October first. On the fifth of October her left ear became very painful, and the tympanic membrane ruptured in 12 hours. On the 12th of October, she complained of pain in her ear, side of the face and teeth. Eleven days later a free incision of the tympanic membrane was made, but her condition remained the same. Her temperature varied between 98° and 100° F., and there was an apparent toxemia. She had a lucocytosis of 16,000. The staphylococcus was found in the pus. On October 28th she complained of double vision. The mastoid process was opened on the same day, and a cavity about the size of a chestnut was disclosed in the posterior part of the mastoid, filled with pus. No osseous necrosis was found. There was no improvement, and the discharge continued for two weeks. At times she complained of pain in the corresponding side of the head and face; she had no appetite, and felt very weak.

On examination, the mucous lining of the tympanum was seen pouting outward through the perforation. The membrana tympani was incised again. Then the mastoid process was opened; the granulations were curetted away and the tegmen of the

mastoid was removed. The dura over the tegmen mastoideum was congested, and the bone covering the descending section of the lateral sinus was removed. A narrow iodoform gauze drain was introduced between the dura and the bone, the lateral sinus was protected by a separate piece, and a third portion was introduced into the aditus ad antrum and the mastoid cavity. She now began to improve.

In case 1 the paralysis was probably due to a toxic neuritis. In the second case it was due to a localized, basilar pachymeningitis.

The operation may be either simple or radical. An exposure of the dura will probably obviate the necessity of a second operation. Potassium iodide may be given with fluid extract of jaborandi, gtts. x to xx in order to promote absorption. Later, a tonic had best be given. If the function of the external rectus muscle does not return after one year, advancement or shortening may be done.

Effects of New Toxic Gases.

These are described by Grivot and Got in the *Revue de Laryngo,* March 31, 1919. Great hoarseness characterizes the early stages, and about the second day diffuse swelling and redness of the mucous membrane appear. This is followed by superficial ulceration on the third or fourth day. The patches, which disappear in two or three days are of an ivory whiteness. The ulcers, which develop on the free edges of the cords, are usually symmetrical. This condition is attended by much muscular paresis of the cords. The hoarseness generally continues for a number of weeks.

Cooperation Between the Various Specialists.

Ernest Sachs *(Annals of Ot., Rhin. and Lar.,* March, 919) makes some excellent suggestions of mutual help of specialists, particularly in neurosurgical cases, which are condensed as follows:

"1. That the surgeon must have had a thorough training in neurology, otology and ophthalmology to enable him to make the diagnosis himself and outline the treatment.

"2. That the neurologist conceive of the surgeon as his partner in diagnosis and call upon him whenever there is the slightest possibility that the case in point may have a surgical aspect.

"3. That the rhinologgist, otologist and ophthalmologist take a greater interest in the nervous system as a whole, rather than in that portion pertaining only to their specialties, and that the first two introduce the ophthalmoscope into their armamentarium.

"4. That, as neurosurgical cases present so many borderline problems, a society to which these various specialists belong might do much to bring us all together."

DERMATOLOGY AND SYPHILIS DURING 1919.

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The current year in dermatology and syphilis has presented a post-bellum renascence. The literature is a trifle richer than it was during the period of active hostilities. No publications have yet reached us from the lands of our former adversaries, but French and English periodicals have arrived. These have scarcely regained their vigor of an earlier day, but it is hardly to be expected that nations so deeply disturbed by the cataclysm would immediately resume their stride. Various American journals have printed articles of first rate value, but the writer of this review will mention only a few of these in the form of a narrative of the tendencies he has read between the technical lines. Many excellent articles have been too restricted to interest anyone but a specialist; others are too long to be abstracted, and merit personal perusal.

In the field of pure dermatology the most noteworthy achievements have been those of Engman of St. Louis and Wile of Ann Arbor. Engman has described, in the Journal of Cutaneous Diseases, a new ulcerative disease caused by an amœba. Wile, in the same publication, has shown that the contagium of juvenile warts and molluscum contagiosum is a filtrable virus. Of less conclusive character, but of no less interest, was an article by Engman on renal function in dermatoses, in which it was shown that such a disturbance existed in many patients with papulo-vesicular affections. Schwartz, Levin and Mahnken published a preliminary report on the alkali reserve, finding it reduced in the seborrhœas, eczema and psoriasis. It is questionable, however, whether investigations on the metabolism of ambulant patients are entirely reliable. Nevertheless the work is not without significance, and it indicates a path to be seriously explored.

In its relation to general medicine dermatology has been keenly analyzed by Engman, who regards the skin as a mirror of the body. This article appeared in the Journal of the American Medical Association, and it strongly excites the sympathy of the reviewer who in recent years has published two papers of like purport. At the last session of the American Dermatological Association Graham Little of London read a comprehensive review of lichen planus, and Fordyce and MacKee also presented a valuable contribution on this topic. Both papers, however, were mainly nosologic in character, and vividly pointed out our monumental failure to solve the etiologic riddle of the disease. Charles White of Boston corroborated, by an extensive series of cases, the work of Ormsby and Mitchell of three years ago, upon dermatomycoses simulating vesicular and dishydrotic dermatitis. Symmers made an excellent study of hemopoietic skin derangements.

Wise, in the Journal of Cutaneous Diseases, published the first worthy American article upon lichenifications. This subject has been ignored in our country, although in France and Germany it has been duly regarded for a generation. Warren Walker of Philadelphia, at the last meeting of the American Medical Association, read a detailed analysis of dermatoses in our army, founded upon figures compiled from our base hospitals at home. Animal parasitic diseases were the commonest, followed in order by those of bacterial and fungus causation. Of the last, erythrasma and epidermophytia inguinalis were those mostly encountered. Other dermatoses were those usual to healthy young men, and showed about the same incidence and order as in civilian life. Rarer or chronic diseases were almost unknown because the afflicted were excluded in the draft. A few developed after induction, but this was due to no peculiarity of military existence, and the patients would probably have acquired the diseases even if they had never donned the uniform. Frank Knowles, also of Philadelphia, made a similar study among our overseas forces and found similar results, with a higher relative incidence of bacterial diseases, due to trench life.

The importance of louse infestations in armies cannot be exaggerated because of the diseases conveyed by this intermediate host. Trench fever and typhus are the most important, as indicated in Walker's and Knowles' papers, and it may here gratuitously be stated that the Surgeon General accomplished a signal feat in the thorough deslousing of our soldiery abroad. By this means tragic epidemics were precluded.

MacKee, in the December issue of the Journal of Cutaneous Diseases, published a succinct but comprehensive exposition on x-ray therapy with special reference to dosage. His work has been stalwart and conscientious, and he deserves sole credit for the recent advancement of x-ray therapy in dermatology in this country, although Pusey was the foremost pioneer in the field. The reviewer can attest, through personal experience, to the precision and delicacy of MacKee's formulas, and to the accuracy of his methods.

Foreign journals have furnished matter of only academic interest, save for a paper on eczema by Brocq in the Annales de Dermatologie, which was largely a rehash of old theories, and presented no new angle of thought. The British Journal of Dermatology was entirely technical.

Syphilis has been generously doled to in the literature, but in quantity rather than in quality. About a tenth of everything written is either novel or new. The rest is remarkable mainly as to its bulk. Much that is purely elementary is discussed to tatters. Articles on the value of the dark field in chancre diagnosis (Journal of Syphilis), or on the incidence of the Wassermann test (British Journal) are examples. There are innumerable others of no greater weight, although ten years ago their contents, which today are axiomatic, would have been read with interest. In the Journal of Syphilis an ever increasing amount of space is being devoted to visceral forms of the disease, a phase of it that cannot be gone into too thoroughly.

The Wassermann test, that topic of infinite debate, has not been overlooked. Lisser of San Francisco, in the Journal of Cutaneous Diseases, has aimed a diatribe at the procedure, so withering that the authors of the test, did they ever become cognizant of the attack, would rejoice in their comparative safety in volcanic Germany. The article is based on the melodramatic assumption that the test is tyrannous, and that helpless syphilographers are supine in its thraldom. A few of the inexplicable features of the phenomenon are catalogued, and the whole business is summarily assigned to limbo. There is an epidemic, at present, of such articles. As excellent a writer as Wile is among those seized. Doubtless the test is often at variance with our prejudices or hopes. It is only by painstaking accuracy and infinite regard for detail that the test can be made mechanically perfect. Kolmer, with his many collaborators, has published a really notable series of articles in the *American Journal of Syphilis*, covering every phase of the technic of the Wassermann test, and indicating both every possible source of error and its avoidance. The attentive ear and receptive mind might perceive some echoes from Kolmer's words indicating that the test has fewer limitations than its misinterpreters. The perceptive would scarcely emphasize the tyranny of the test. In addition to these articles there have been countless statistical essays.

Guy of Pittsburgh reported his experiences with arsphenamine, based upon 25,000 injections given at Camp Travis. The paper appeared in the *Journal of the American Medical Association*, and is valuable since it shows the rarity of reactions when proper technic is followed. In this connection should be mentioned Stokes' article on the use of atropine to prevent acute reactions. He injects gr. 1/50 hypodermatically before the intravenous therapy, in patients having had previous reactions. His experiences are correct so far as the present reviewer has been able to ascertain. There has been the usual amount of calamity howling about the toxicity and dangers of arsphenamine, but Guy's figures would appear to indicate that in experienced hands the untoward eventualities are few. Dermatitis exfoliativa, hemorrhagic encephalitis and nephritis, etc., have been reported by many writers.

Clinical syphilis has been very little touched on save for an article by Nicolau in the Anuales de Dermatologie. This author reports an observation as to pupilary irregularity in early syphilis. There is no similarity to the Argyl-Robinson phenomenon, but subsequent neurosyphilis may be feared if treatment is inadequate. Neurosyphilis is still a therapeutic storm center. The Catos who fear subdural treatment are still inveighing against the misguided Carthagenians who favor it. Carthage, however, is not yet destroyed.

During 1919 dermatology rather outstripped syphilis in literary interest. The questions of reinfection, superinfection and chancre reduction require more study. A greater knowledge of the biology of the spirochete is needed. These problems, if attacked with new vigor, would resuscitate syphilography, and it is to be hoped that they will be accorded greater emphasis in the ensuing year.

780 Madison Avenue.

Organic Lesions of Pancreas.

Clinically, an organic lesion of the pancreas produces other effects besides glycosuria. Defective external secretion is indicated in the feces by (*a*) the presence of undigested muscle nuclei after a meat meal; (*b*) the presence of starch grains after unboiled starch has been given; (*c*) and the presence of excess of neutral fat. Of these the last is the most striking. The intestinal fermentation of carbohydrate may lead to oxaluria (Cammidge).

The diastatic ferment which fails to reach the bowel will be reabsorbed into the blood-stream, and will reappear in the urine. Normally there are some 10 to 30 units of diastase in the urine. In acute obstructions to the duct this may be increased to 300 units or more—in one case of mine it reached 1,000—while in chronic obstrutcions figures of 64 to 128 are more usual.

The dilatation of the pupil within 20 minutes to one hour after insillation of two separate drops of liquor adrenalin hydrochlor., with an interval of five minutes between them, is considered by Loewi to be another sign pointing to insufficiency of the pancreas. He noted this occurred in de-pancretized animals, and referred it to a loss of balance between the antagonistic internal secretions of the adrenal and pancreas. This test has been positive when the pancreas was not involved, and negative when it was. So that it cannot be regarded as satisfactory, especially at a time when the polyglandular doctrine is on its trial.

Disintegration of pancreatic substance may result in the appearance of a pentose-like body in the urine, probably derived from the pancreatic nucleo-protein. Cammidge's reaction appears to depend on this substance. Symptoms of pressure on the bile-duct and of irritation of the solar plexus may also occur. Hyperchlorhydria may result from deficient secretion of alkaline pancreatic juice and pyloric spasm will be excited.

Of all these signs Langdon Brown relies most on the excess of neutral fat in the stools, and of diastase in the urine.—(*Lancet.*)

General Scientific

NOTES UPON FRACTURES OF THE FEMUR.

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Fractures of the femur, et al, as witnessed in the hospitals of the A. E. F., differ very greatly from those in civil life. In civil life the exception has been infection. In the A. E. F. the compound fractures have all, without exception, been infected.

The organisms causing the infection have been streptococci, staphlococci, mixed streptococci and staphlococci, gas, ærobic, anarobic, and those of undetermined origin.

Fractures have varied from a slightly shattered to a severely comminuted condition of the bone, and in some cases, loss of a segment of the entire calibre of the shaft.

They have been caused by high explosive shells, machine gun bullets and shrapnel.

The damage done to soft parts in many cases has been out of proportion to that sustained by the bony structure.

The location of the fractures varied considerably. In a series of thirty-six cases of compound comminuted fractures of the femur, we had nineteen of the lower third, six of the middle third and nine of the upper third, with two linear fractures. The following is a brief resumé of twelve of the cases:

Case I. Private A. L. S., No. 2940002, aged 24. Wounded October 10th, 1918. Gunshot wound, severe; high explosive. Fracture compound comminuted, infected right femur, upper third. He came into the hospital in a Thomas splint. Carrell-Dakin tubes were inserted and intensive treatment begun. November 11th, 1918, an operation was performed, debridement, removal of necrotic bone, with through and through drainage instituted. Thomas splint reapplied. Infection due to mixed streptococci and staphylococci. Convalescence very much prolonged. He was evacuated to the United States, January 16, 1919.

Case II. Corporal P. R., No. 1899462, aged 24. Wounded Ocotber 12, 1918. Gunshot wound, severe, machine gun bullet; fracture compound comminuted, infected left femur, lower third. The infecting organisms were streptococci and staphylococci. He was operated upon October 31, 1918, and drainage instituted. November 3, 1918, amputation was advised and performed. Convalescence followed slowly. He was evacuated to the United States, January 16, 1919.

Case III. Private E. B., No. 13133107, aged 24. Wounded October 10, 1918. Gunshot wound, severe, through and through, machine gun bullet. Fracture compound comminuted, infected, left femur, upper third. Organisms, streptococci and staphylococci. He was operated upon December 27, 1918. Removal of sequestrum and drainage instituted. The Thomas splint was retained. He was evacuated to the United States, January 16, 1919.

Case IV. Private F. J. C., No. 75931, aged 25. Wounded November 1, 1918. Gunshot wound, severe, shrapnel. Fracture compound comminuted, infected, right femur, upper third. Organisms, staphylococci, mixed streptococci and staphylococci, anerobes, some undetermined. He was operated upon November 2, 1918, debridement, removal of bony fragments. November 12, sequestrectomy and drainage. December 12, amputation advised and performed, right thigh. Recovery complete and uneventful.

Case V. Private J. J. R., No. 3335063, aged 29. Wounded November 3, 1918. Gunshot wound, severe, high explosive. Fracture compound comminuted, infected, left femur, middle third. Organisms not given. Carrell-Dakin tubes were inserted, wound being flushed every two hours; application of Thomas splint. Convalescence prolonged, due to a fracture of right tibia. Evacuated to the United States, January 16, 1919.

Case VI. Private S. H., No. 2868371, aged 23. Wounded October 4, 1918. Gunshot wound, severe, high explosive. Fracture compound comminuted, infected right femur, lower third. Mixed streptococci and staphylococci; severely mutilated condition of soft tissues. Carrell-Dakin tubes were inserted and the limb placed in a Thomas splint. October 4, removal of patella. October 23, through and through drainage. Ocotber 29, drainage of knee joint. November 3, amputation advised and performed. Convalescence slow, due to infection. Patient was evacuated to the United States, January 16, 1919.

Case VII. Private C. A., No. 2825816, aged 25. Wounded October 10, 1918. Gunshot wound, severe, machine gun bullet. Fracture compound comminuted, infected left femur, middle third. Organism, streptococci. October 12, 1918, the wound was debrided and a Thomas splint applied. Formation of callus. He was evacuated to the United States, January 16, 1919.

Case VIII. Private L. B., No. 1419056, aged 24. Wounded October 10, 1918. Gunshot wound, severe, shrapnel. Fracture compound comminuted, infected right femur, upper third. Organism, streptococci. Application of Thomas splint. Carrell-Dakin tubes were inserted and the wound flushed every two hours. Very good recovery. Patient was evacuated to the United States, January 15, 1919.

Case IX. Private C. F., No. 2130321, aged 28. Wounded October 20, 1918. Gunshot wound, severe, machine gun bullet. Fracture compound comminuted, infected, left femur, middle third. The infection was very slight. Carrell-Dakin tubes were inserted and a Thomas splint applied. Apposition was not good, but a sufficient amount of callus formed to make a good result. He was evacuated to the United States, January 16, 1919.

Case X. Private H. H., No. 1908372, aged 26. Wounded October 10, 1918. Gunshot wound, severe, shell. Fracture compound comminuted, infected right femur, lower third, organisms being mixed streptococci and staphylococci. Carrell-Dakin tubes were inserted and a Thomas splint applied. November 11, debridement with removal of bony fragments. Convalescence satisfactory. Patient was evacuated to the United States, January 16, 1919.

Fig. 1.—Fracture Ward. Shows Balkan Frames and methods of suspension and immobilization.

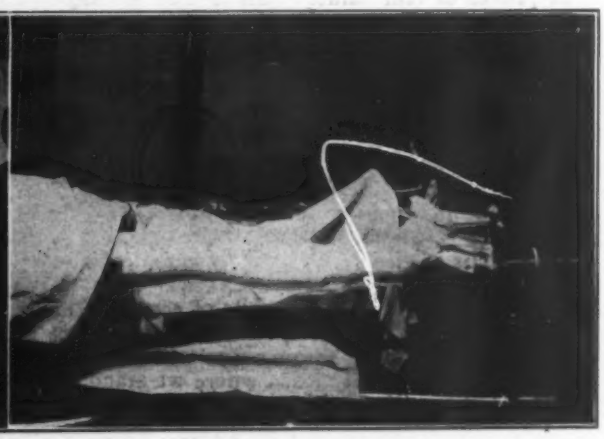
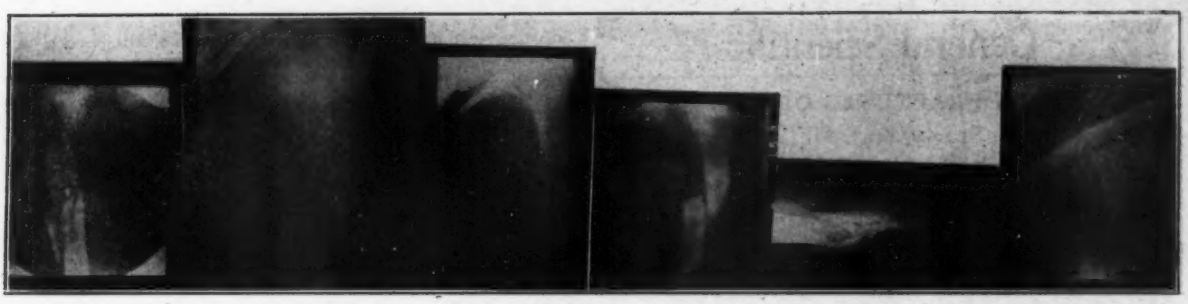


Fig. 2.—Hawley Table and method of immobilizing simple fracture of the leg after reduction by traction and manipulation.



Case 1, Fig. 3, A. L. S.—G. S. W., severe, thigh, rt., due to high explosive; fracture compound comminuted middle third shaft rt. Femur. Foreign body present.

Case 3, Fig. 4, E. B.—G. S.W., severe. Thru and thru due to machine gun bullet. Fracture compound comminuted. Thomas hip splint in place.

Case 4, Fig. 5, F. J. C.—G.S. W., severe, due to shrapnel. Fracture compound comminuted r t. Femur. Thomas hip splint. Carell tube in situ.

Case 5, Fig. 6, J. J. R.—G.S.W., severe, H.E.,Fr.C.C., infected left Femur. Position bad.

Case 11, Fig. 8. G.S.W., severe, machine gun bullet. Fr.C.C. infected left Femur.

Case 9, Fig. 7. G.S. W., severe, machine gun bullet. Fr.C.C. left Femur. Thomas hip splint in situ.

Case XI. Private A. O., No. 210350, aged 30. Wounded Ocotber 11, 1918. Gunshot wound, severe, machine gun bullet. Fracture compounnd comminuted, infected left femur, middle third. Organism, unknown origin. October 12, debridement and application of Thomas splint. Carrell-Dakin tubes were inserted and the wound flushed with Dakin solution every two hours. Convalescence was very slow. The patient was evacuated to the United States, January 16, 1919. Result very good.

Case XII. Private G. J. K., No. 1330246, aged 27. Wounded Ocotber 10, 1918. Gunshot wound, severe, machine gun bullet. Fracture compound comminuted, infected outer condyle and lower third right femur. Organisms, mixed streptococci and staphylococci. October 30, outer condyle removed. November 8, amputation advised and performed at middle third. On the fifth day extension was applied to the flaps, which pulled the soft parts over the stump. Results were very satisfactory. Patient was evacuated to the United States, January 16, 1919.

Fractures of the femur were treated according to the individual requirements. In many cases, early extension was impossible, due to the mutilated condition of the soft parts and injury to the bony structure below the knee.

Traction was established as early as possible. The majority of cases were put up in Thomas splints at the Evacuation hospital and these were retained where satisfactory. Hodgens splints were used with very good results. Many cases were suspended in Balkan frames, with counter extension.

Without exception, our fractures were treated with Carrell tubes and Dakin solution applied every two hours, the number of tubes depending on the extent of infection and mutilation of the soft tissues. Excellent results were obtained beyond our expectation.

The Man Young at Fifty

HOW A MAN OR WOMAN OF MIDDLE AGE MAY RENDER AVAILABLE LATENT ENERGIES BY REVISIONS OF CONDUCT.

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It is not so much what capabilities we originally possess as what we can keep and make good use of, that proves of real value. This is true for anyone, at any age, and for any situation in life. Especially significant is this truism when middle years approach. We may construe the Human Meridian to be at from forty to sixty years. During that period conditions, original or acquired, differ so widely that some are young at sixty and others old at forty.

During youth powers are so abundant, impulses or points of view so exuberant, expectations so confident, that prodigality in expenditure is a natural characteristic, and is followed by no great harm. This surplus of energy leads to wastefulness, indeed often to early bankruptcy. The greatest rewards come not so much through habits of economy, as by achieving a full appreciation of the splendors of present existence. All these assets may be yours or mine provided we early learn where we stand in the scheme of busy life, and how to make use of opportunities and advantages. Equipped with so much certitude, and fortified with judgment, we can safely permit ourselves generous lee-ways to enjoy whatever blessings come in our paths.

Miserliness never brought joy to the possessor of unused increments. By taking the goods the gods provide, and using them thankfully and wisely, is the way happiness comes, and thus life enlarges and our selfhood expands.

Once I heard Dr. Weir Mitchell reply to his son (then about fifty) who remarked that a certain proposal would be an extravagance, "Well, my boy, I have often regretted practicing economies, but rarely repented a reasonable extravagance."

I.

An attractive thought to me is that at the apex of maturity we enjoy a period of Indian Summer when we may bask in the radiance of the autumnal glow. Let us then assume middle age to be a vantage point from which the future can be viewed in the light of earlier years. Before this episode admonitions are liable to fall on deaf or indifferent ears. The wisdom of experience is accepted impatiently by prepotent youth, and only endured as they assume it may please their elders.

Small good comes of warning the young or in urging economies of strength and health till one's joints begin to creak, bones to ache, breath to come short, or other reminders arise of the approach of the evil days wherein no strength is.

Little use to preach the gospel of self betterment thru careful living till full maturity, say from forty to sixty years. Earlier than this few ears are open to admonition. Sobriety of viewpoint may sometimes then set in, or a tendency be shown to accept counsel from

experts (real or near). Only as the shadows lengthen is a willingness shown to practice economy, to make the best of, or to enhance that measure of capacity of which one may be possessed.

There is here offered merely one man's experiences, inferences, and recommendations, put briefly and soberly; somewhat dogmatically perhaps. Opinions on mental and physical hygiene are subject to much change as social conditions alter, and as scientific findings increase.

Fundamental knowledge is plentiful on how to treasure human assets, and with the chief points each one should become familiar. No attempt is here made to cover the whole ground but merely those items which experience has impressed upon the author as worthy of mention.

Some men and women need no help in the regulation of their lives on the material plane; the majority, however, do. It is to those who do need sanitary counsel that these remarks are addressed.

Little more is offered than carefully selected points of view and suggestions by a physician whose aims have always been to contribute to raising the index of human vigor and proficiency, to a consideration of the welfare of the man's self as paramount to any accidents of circumstance.

Betterment of present efficiency is within the powers of anyone. Latent energies persist abundantly till near life's end, and may even then be made available. Sane promptings should be obeyed; and good judgment used in avoiding or in emancipating one's self from vitiated habits; above all hurtful suggestions should be shunned when offered by shallow minded or designing persons.

Incurable diseases, in some stages, do indeed seriously exhaust energies. Even when they are grave all is not lost, unless despair, not fate, inflicts the knockout blow.

A serene confidence, a courageous effort at maintaining maximum energy, will buoy one over manifold obstacles long regarded as insuperable.

The impossible nowadays so frequently becomes realized we can be well assured that by wholesome efforts at restitution, wonders of improvement are in reach of all. This holds until inevitable deterioration compels resignation.

Only extreme peril follows denial or disregard of unlovely or terrifying actualities. When disaster threatens or catastrophe impends, the time has come for making the best use of every available reserve.

It is rank folly, or culpability, for anyone either (1) to ignore manifestations of diseases or their effects; or (2) to omit using every possible precaution or reasonable remedy.

Approaching old age is well described as the period of renunciation. The normal individual, during the phases of decline or decadence, need suffer little distress except such as are of his or her own making.

Enough of resources always remain, which, if judiciously conserved, will sustain the most bereft in relative happiness and efficiency.

Let us now inquire whether so much optimism can be supported by experience and scientific findings. Facts there are in plenty; what is needed is judicious interpretation. Let us sift the testimony hopefully and with an open mind; let us meet disabilities with a deeper search into reputable evidence as to fundamental causes and inevitable effects.

II.

Any man or woman past middle life, free from marked or disabling damage, can so improve the body as to overcome effects of most, even of the more insidious, degenerative processes. This may be done by revising methods of life consistentlyl, along with revisions of habit and custom. No need of assuming that best results are incompatible with ordinary living or reasonable demands, domestic, industrial or social. One constantly hears of sudden disastrous happenings to acquaintances who wilfully neglect rational means for conserving organic integrities. It is entirely possible to escape most perils by adapting one's self to each stage of evolution as years advance. Play the game fairly; you have no one to cheat but yourself.

Whosoever, having passed the meridian, appreciates the joy of living healthily, free from growing ailments, can achieve physical equilibrium by observing reasonable and moderate precautionary measures.

Those who are at, or near, the mid-century mark, are apt to shake the head disapprovingly at exuberant merry makings of youth. Viewed from their sedate standpoint of subsiding energies, any prodigality of effort would seem unwarrantable folly. That equipoise on which we plume ourselves appears to us the acme of philosophic calm, of auspicious wisdom, of meritorious orderliness and thrift.

Equanimitas at every stage of life's journey is the one sure position of advantage. The seemingly insuperable would be oftener achieved if more could early learn the power of deliberate volition. Contained power is manifested by wholly banishing fear and its correlate anxiety, worry, dread of the vaguely possible. Strength is always most economically expended by an organism in which energy is tempered by a well ordered restraint.

Here you have the distinguishing characteristics of maturity. Growth forces will never attain effective elaboration if deviated by prolonged opposition. They seldom fail of legitimate fruition in one whose sanity of mind or body is not grievously impaired, or in whom moderate courage exists, or persists. The canker in any organism capable of worst harm is fear. Fear no bigger than a suspicion may grow to unbelievable proportions unless resolutely controlled. Non resistance to awe, anxiety, trepidation, will insidiously grow into fright, terror, dismay and all the ugly hobgoblins of despair. Body then comes to share in the disintegration of consciousness.

Organic competence, hence happiness, is, after all, largely a question of economy, of conscious control, and of agreeable cultivation of resources. Every intelligent individual must ask himself frankly, is the preservation of health worth the effort? There is no negative answer. Results can only be assured when aware of factors involved, the "how much, when, and how." Those who plume themselves on "prefering a short life and a mrery one" are not then wholly sane. They are in a negative or reckless phase.

The first self duty, and a most pleasant one, is that each shall remain at his best; accepting the truism that health is earned, not deserved; that the guerdon of lifelong efforts is attained only by intelligent, confident self direction. In short, without one whit of morbid self-attention, fearsome watchfulness, the goal of serene old age and final euthanasia, is within the reach of all who realize early enough the inevitble decadence and end.

As years flit by, other phases of evolution occur, threatened with increasing shoals and quicksands which must be avoided as best one may, till finally the human craft is cast on shore. Each phase is normal, more to be welcomed than its predecessor, for those who discharge obligations to themselves in each. It is tawdry philosophy, rank irreligion, to deny actualities, to wilfully neglect precautions, to leap before looking into

the increasing tortuosities of the road. One stupid or careless act might jeopardize the integrity of body and mind by omitting to use one's good sense to save and enjoy that equisite human mechanism, the greatest monument to beneficent design.

III.

All life, not merely old age, becomes a series of renunciations. That one is more nearly the wisest and most admirable who meets every changing requirement with serenity of mind, every turn of the road with vigilance and industry.

The beneficent God made man an animal of the highest order (primate) and intelligent differentiation ("Homo sapiens") giving him dominion over all living things. None the less he is an animal; his intellect depends for efficiency upon the integrity of his body, and this body is like unto those of the beasts in its needs and limitations. The chief of these needs is that this body shall be kept in good condition at all times, in early or late life, thru all homely, social, industrial or changing exigencies. Limitations exist in each and must be reckoned with. However amazingly abuses can be survived, each one leaves an irrevocable stain or weak spot which accumulate and narrow the field of survival values.

It is not only good sense, it is a personal obligation to maintain one's physical efficiency as a correlate of one's mental efficiency and moral equipoise. The two are, and always must be reckoned with, as one and indivisible.

IV.

Briefly, what is this body of ours and how can it be made to serve us longest, for duty, for pleasure, for social or public service?

The body is compounded of cells which vary in their life-cycle, always approaching a higher degree of stability till the meridian is past; then declining in proportion to the measure in which it has ben conserved or maltreated. Ideal conditions being observed, this cycle should run to about one hundred and fifty years (Metchinikoff). Heredity has much to do with survival, accident something more; but most of all, to ordinary exigencies which can be readily met and turned to economic account by right conduct, self-respect, consciousness of personal obligation.

As has been said, any one, of any age, can do much to bring his own body (phycho-physical makeup) to a higher degree of efficiency than exists at the present, and even far beyond the average, by faithful observance of simple rules of conservation.

The key to energizing lies in habituating one's self to rational procedures, in acquiring skill for employing most of them, using daily such conservative measures as varying exigencies permit; also in compelling one's self to enjoy both performance and effects by regarding them as a conscientious duty owed one's self as trustee of a divinely perfected organism.

American Hospital for Great Britain.

Plans for the establishment of an American hospital in London are now well advanced. Lord Reading has accepted the presidency of the hospital. Upon the signing of the armistice it was considered that the moment was ripe for bringing the project of an American hospital to the consideration of the medical profession in Great Britain as well as of the American colony in London. The promoters were of opinion that the need of the foundation of such a hospital was obvious, and that the exceptional opportunities of the moment were never likely to recur. The medical profession in America and in Great Britain has hitherto worked too much apart, although each has much to learn of the other. The incidence of the war has brought them into closer contact.

Sir Anthony Bowlby has borne warm testimony to the sympathy between the medical profession in the United States and in Great Britain. He recalls that "an American unit from Harvard University, under Colonel H. Cabot, completely staffed one of our general hospitals in France as early as 1915, and in 1917 six more British hospitals in France were staffed by the United States. In 1917 the British army in France had one to two hundred American surgeons working on our front with regiments, field ambulances, and casualty clearing stations, and not a few of them were killed or wounded while serving under the Union Jack. The services they rendered at a time when we were very short of surgeons should never be forgotten, and it would be impossible to overestimate the cordial good fellowship and mutual regard and esteem which prevailed everywhere."

American medical men have not only been attached to British units in the field, but have worked side by side with the British medical man upon the staffs of military hospitals in all parts of England and Scotland. The help given in the hospitals of this country, especially by the teams of orthopedic surgeons who came over when we were in dire need of their skill, will never be forgotten. The comradeship brought about by such friendly co-operation and interchange of scientific knowledge is of such importance to the future of the two nations that it must be encouraged and strengthened in every possible manner. The scope which should be given to the hospital was discussed by a Medical Executive Committee, consisting of Sir William Osler, Sir Arbuthnot Lane, Sir Humphry Rolleston, Sir John Bland-Sutton, Mr. J. Y. W. MacAlister, and Mr. Philip Franklin.

The detailed organization of the hospital has been planned upon the most modern lines, and will be complete in every department of medical and surgical activity; accommodation will be arranged for every class of patient. A research institute, modelled upon the Rockefeller Foundation of New York, will form an integral part of the building. The consulting staff will bring together many distinguished members of the profession in the United States and Great Britain.—(*Brit. Med. Jour.*)

Prophylaxis of Influenza.

If we may judge the future by the past, there is likely to be a recurrence this fall and next winter of the influenza epidemic which resulted in the death of nearly half a million persons in this country a few months ago. In the event that this forecast proves true, what can physicians do to limit the spread of the disease and lessen its terrors?

Immunization with a reliable vaccine would seem to offer the best solution of the problem. Clinical reports on the use of preventive vaccine, as published in various medical journals in recent months, warrant this conclusion. Three instances are here cited:

In Cleveland last spring 3,427 prophylactic injections of influenza vaccine were given to the employees of a large manufacturing plant. Of those who received one injection, 378 developed the disease; of those who had two injections, but 37 were affected, while of those who received the full course of three injections, only three contracted influenza. Of the whole number attacked, seventeen died. Eleven of these had not been treated prophylactically, while the remaining six had had but one injection.

In the *Kentucky Medical Journal* for May, 1919 (page 199), the editor says: "The reports from some three hundred thousand cases indicate that the vaccine (Rosenow) decreases influenza, almost entirely prevents pneumonia, and in practically no case where it was used had death occurred."

In the *Canadian Medical Association Journal* for June, 1919, Major F. T. Cadham, C.A.M.C., reports his observations on the use of preventive vaccine in the influenza epidemic in Winnipeg. He says: "I believe the vaccine used as a prophylactic for the members of the Canadian Expeditionary Force of this district to have been of value. The incidence of pneumonia was less than one-half and the mortality rate less than one-fourth in the inoculated, as compared with the uninoculated, admitted to the special hospital under similar conditions."

Resolve to own a Hundred Dollar War Savings Certificate. Start saving one—at once. Buy Thrift and War Savings Stamps.

The more you loan the Government, the less your taxes will be. Ever think of that? Better buy Thrift and War Savings Stamps.

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Postural Treatment of Tuberculosis.

Dr. W. F. R. Phillips reminds us that the erect posture causes the blood to accumulate in the more dependent portions of the great vascular reservoirs of the body and suggests that the fact that pulmonary tuberculosis is almost always apical in the beginning means that the orthograde posture introduces changes in the hydrostatics and hydrodynamics of the pulmonary circulation which favor tuberculous infection.

In the course of an article in a recent issue of the *Medical Record* Dr. Phillips points out that recumbent rest benefits the diseased apical regions because they become absolutely more hyperemic, a large part of the blood from the previously overfilled and larger lower lobes being returned to them by hydrostatic pressure; moreover, whatever defensive and offensive properties may be present in the blood are brought into action at the seat of the disease. As long as recumbency is maintained, he remarks, the therapeutic effects of these properties are at a maximum, and if equal or superior to the power of the invading germs, stay or cure the disease, as the case may be.

It has occurred to us, while reading Dr. Phillips' article, that still further advantage might be taken of the hydrostatics and hydrodynamics of the pulmonary circulation. Why not an inclined-plane posture, with the chest lower than the pelvis? So long as an active case of tuberculosis has to remain in bed a moderate degree of inclination might as well be employed, at least part of the time. It would be feasible in institution work to try out the effects of the Trendelenburg position, practised as part of each day's therapy.

An Unfortunate Child Type.

There is little or no poverty now, according to the Honorable Job Hedges and other publicists, and we are seldom called upon to shed any tears over the wretched poor. If the children of the slums are not well nourished it is as much because the art of feeding them properly is not well understood as because of the high cost of living. But the dreadful spectacles once so familiar are seldom seen now, since father has begun to earn a dollar an hour, if not more.

Let no one think, however, that there are no frightful examples of child pathology in our midst. The city of New York possesses quite a large number of children whose plight is really worse than that of the children of the erstwhile slums.

We are referring to the type of miserable little wretch who is the only child of members of the salaried bourgeoisie living in genteel lodgings.

This child misses even street life, has no child companions in the lodgings euphemistically called home, suffers under the strife of the parents engendered by their deplorable condition, and is physically a freak.

Such a child has unwholesome appetites, or no appetite at all. He is fed in a fearful and wonderful way and will either not drink milk or gets no milk to drink. He is anemic, of poor muscular fiber, not necessarily undersized but of subnormal weight, and his teeth are not normally aligned.

This type of child is a social, economic, physical and spiritual changeling—a sad commentary upon the frightfulness of one phase of our middle-class life.

The mother is a discontented but colorless creature, untrained for any rôle, without any aim in life, and not given to indulging even in "purposeless activities."

The father's salary enables the family to wear good clothes and live in cramped and shabby-genteel quarters in the better section of the city.

The sexual life of the couple is of that sort marked by clumsy and unhealthful methods of averting maternity, with all the consequent neurasthenic bickerings.

The well-dressed child freak, with all the wealth of mental and moral morbidity so well described by Brill in his treatise on the only child, plus the pathology that grows out of its economic milieu, does not inspire the same degree of commiseration as the old slum type, though it is a far more tragic figure.

The slums were never quite hopeless, in respect of their child life, but the lodgings on Madison Avenue are despaired of by the gods and unknown to or beyond the help of uplifters.

The Silver Lining.

From the medical standpoint the passing of the domestic servant is no calamity. Probably there has been, in the past, no more infective agent than the food-handling maid. The Typhoid Marys were played up unduly; more should have been heard of the Colon Marys, the Streptococcus Marys, the Pyorrhea Marys, and the Secondary-Lesion Marys.

We wonder whether the inexplicably good health conditions in New York City are not due in large part

to the reduction in the ranks of domestic servants? This seems a reasonable assumption, since no class ever possessed a better strategic and tactical position wherefrom to menace pathologically the American home, and in New York City above all places this class was most in evidence.

These sappers and miners against the public health are still members of the community, of course, but they are not living in intimate contact with, and handling the food of, the families by which they were formerly employed.

Centrifugalization as a Clinical Resource.

Broca and Garsaux have made some interesting experimental studies on animals subjected to centrifugal force. They put animals weighing from 10 to 13 kg. in an especially constructed centrifuge and subjected them to varying rates of speed for five-minute trial periods. An extreme limit of speed brought about the death of the animals, with congestion of the abdomen as the chief feature. Somewhat lesser speeds produced signs of undue pressure on the nerves accompanied by "epilepsy" and lesions of the cerebellar peduncles.

It seems to us that the posture of the animals centrifugalized would affect the results greatly. Everything would depend upon whether the blood were thrown toward the head or contrariwise. And might it not be that if the throwing of blood toward the head produced epilepsy, that moderate centrifugalization of the blood away from the head might prove beneficial therapeutically in *grand mal?*

Theoretically, moderate centrifugalization of blood toward the head ought to relieve dropsy of the extremities and cerebral anemia.

The experiments of Broca and Garsaux were made in an attempt to shed some light upon the sudden death of aviators. We have seen no suggestion as to therapeutic implications.

The Chief Menace to Americanism.

Why it is that we grow hysterical over our radicals, and have no fear whatever, apparently, of the uplifter?

The medical profession has a right to be more deeply concerned over this matter than any other class, for a most determined effort has been made to socialize our rank and file by a gang of these uplifters. With the socialization of the medical profession accomplished it can readily be imagined what would soon happen to other classes. In protecting ourselves we are really protecting society.

The typical uplifter is obsessed by the idea of mass welfare measures of a palliative sort, and he longs for the day when through an autocratic governmental arm he can apply his compulsory insurance and other forms of poor relief in the interest of a master class. However, his efforts are by no means limited to the poor alone; he wants a benevolent despotism ordering every detail of the lives of other men—he to do the ordering.

The famous old poem tells us about how the Turk dreamed at midnight in his guarded tent of the hour when Greece, her knee in suppliance bent, should tremble at his power. Well, the dreams of the old Turk were very pale stuff compared with the Bolshevist yearnings of our uplifters.

One of the most interesting phenomena of the present day is the oblivion of society in general to the menace of the audacious crew in question.

Meanwhile we deport the Goldmans and Berkmans, demand 100 per cent. Americanism, get panicky about parlor Bolshevists, regard people askance who express liberal and rational views on social, economic and political matters, are puzzled by intelligent and kindly citizens who fraternize with "foreigners," indulge in a general orgy of mass psychopathology, but have never a misgiving about our mischievous uplifters, the most dangerous influence upon fundamental institutions in the country.

We are willing to qualify the foregoing remarks to the extent of conceding that the professional uplifter is a propagandist, and that it is those behind him who ought to be smoked out.

Why drive out a Scott Nearing and permit men to remain in our universities compared with whom the Pennsylvania economist was a veritable chauvinist, and not only permit them to remain, but honor them?

We stand for these respectable anarchists even when they attempt to shape the policies of the great political organizations, in the manner which we are now witnessing. They get away with murder while we are very busy hating the wrong people. Our attention is almost wholly diverted to the Goldmans and Berkmans and to the playing of music written by Germans.

Are we a nation of morons? What is the matter with us? Why should the high connections of these smug nuisances paralyze us? From what disease of the soul are people suffering who are avid for paternalism in America while they profess horror of the present Russian dispensation?

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

A Paradise of Medical Socialization.

The Serbian public health system was one of the most interesting things that we encountered. It is virtually a system of state medicine, as the vast majority of the physicians outside of Belgrade are employed either by the central government or by the larger villages. . . . Essentially the system consists of 18 provincial physicians under each of whom there are from two to six district physicians. The latter begin with a salary of 2,000 dinars per annum (about $350), which amount is increased 250 dinars every five years.—Edward S. Godfrey, Jr., M.D., in the Monthly Bulletin of the New York State Department of Health (Oct., 1919).

Medical Imagery.

An excellent example of how necessary it is in these days to resort to medical imagery in order to express clearly certain modern thought is afforded by the following poem by Edgar Lee Masters, the author of the famous Spoon River Anthology. Note particularly the last two lines:

A REPUBLIC

By Edgar Lee Masters

Her faith abandoned and her place despised,
Her mission lost through ridicule, hooted forth
From the forum she erected, by cat calls,
And tory sneers and schemes. Her basic law
Scoffed out of court, amended at the need
Of stomachology by the judges, or
A majority of States, as it is said—
Rather by drunks and grafters, for the time
The spokesmen of the States, coerced and scared

By Methodists with a fund to hire spies,
And unearth women scrapes, or other sins
With which to say: Vote dry, or be exposed.
A marsh Atlantis drifting, towed at last
By pirates into harbor, made a pasture
For alien hatreds, greeds. A shackled press,
And voices gagged, creative spirits frozen,
Obtunded by disgust or fear. War only,
Armies and navies speak the national mind,
And make it move as a man; for other things
Resistance, thought divided, ostracism,
Or jail for their protagonists. At the mast
The cross above the cross-bones, in between
The starry banner. A people hatched like chickens:
Of feeble spirit for much inter-crossing,
Without vision and without will, incapable
Of lusty revolution whatever right
Is spit upon or taken. A wriggling mass
Bemused and babbling, trampling private right
As a tyrant tramples it, calling it law
Because it speaks the majority of the mob.
A land that breeds the reformer, the infuriate
Will in the shallow mind, the plague of frogs
That hop into our rooms at Pharaoh's will,
And soil our banquet dishes, hour of joy.
A giantess growing huger, duller of mind,
Her gland pituitary being injured!

An Eye for a Tooth.

From the London Morning Post.

In a certain part of our African dominions is a doctor who acts as understudy to the magistrate. Recently each was conscious of having transgressed by riding a bicycle without a light. They decided that the majesty of the law would best be vindicated by each appearing before the other. The magistrate, taking precedence, first tried the doctor and fined him five rupees. Then the doctor tried the magistrate and fined him one hundred. The reason he gave for his severity was that the offence was becoming far too common.

A Michigan Puzzle.

From the Detroit News.

Granted that a doctor has found a way of adding fifteen years to a man's life, could a man really afford it?

A Georgia Diagnosis.

From the Franklin News and Banner.

He was recently with his father, who is in a strange condition caused from trouble with his head.

Acute Yellow Atrophy of the Liver.

This is a common condition after many chemical poisons and many infective processes. Its not infrequent occurrence in pregnancy, due no doubt to the production of autogenous poisons, is of special interest. "Acute yellow atrophy" is a morbid anatomical condition of the liver due to some toxic cause and with increased knowledge this disease will cease to be regarded as a separate entityt. The morbid anatomical condition of the liver known as "acute yellow atrophy" gives rise to loss of hepatic function and this symptomatically gives rise to the "symptom-complex" known as "icterus gravis." The loss of function may result not only from a condition associated with shrinkage—i. e., "acute yellow atrophy"—but also, as in delayed chloroform poisoning, from an extensive and rapid degenerative change of the liver cells followed by loss of function, no diminution in size or "atrophy" of the organ occurring. —(*Lancet.*)

Diagnosis and Treatment

Lumbar Puncture and Headache.

The occurrence of headache after lumbar puncture is a well-known phenomenon. An attempt at explanation has provoked many discussions, and recently MacRobert has evolved a theory affected by posture. The line of reasoning about to be dewhen the patient sits up and disappears when the patient lies which attributes the headache to certain mechanical conditions down. While there may be some merit in the author's speculations, unfortunately his premise is by no means an invariable condition. C. H. Frazier reviewing the subject, says he has seen a number of patients, upon whom he performed a lumbar puncture and who were instructed to keep to their bed afterward, complain bitterly of headache, and he is sure that this has been the experience of others. MacRobert maintains, in the first instance, that the puncture opening in the dura is not closed after the withdrawal of the needle so that the fluid continues to drain from the cerebrospinal sac. The amount of fluid collected at the time of puncture, therefore, is no criterion of the amount which may eventually escape. This much Frazer believes to be true. And he has seen in one instance an area of edema develop in the subcutaneous tissue about the site of the puncture which unquestionably bespoke continues drainage of fluid. MacRobert refers to a case in which he was obliged to suddenly withdraw the needle, without collecting fluid, and the patient developed a severe headache lasting eight days.

The author's explanation of how this drainage of fluid operates in the production of headache is as follows: The cerebrospinal fluid contained in a closed sac forms a pad for the brain and spinal cord. At the base of the brain this pad becomes a veritable cushion or water-bed. When the fluid leaks away through a hole in the lower end of this sac, the base of the brain loses, its supporting fluid cushion. We may expect this support to remain absent until the puncture hole heals and the fluid again fills and distends the sac sufficiently to re-establish this water-bed. The loss of this supporting basal cushion may be regarded as the secondary causative factor in the production of the headache. How does this produce pain? A headache, which, let us recall, comes on when a patient sits up, and disappears when he lies down, must obviously be mechanically produced. Pressure of the meninges by the brain weight, against the irregular bony surface of the base of the skull, which would ensue when the patient sits up, in the absence of the basal fluid cushion, might be considered to be sufficient cause for headache. However, another explanation appeals to him as more aptly applying to the situation.

A mechanical accident following spinal puncture has caused sudden death in certain brain tumors, and other intracranial pressure. The withdrawal of fluid deprived the base of the brain of support, and allowed such forcible descent of the pons on the clivus of the occipital bone that prolapse of the medulla through the foramen magnum occurred. In the average normal case, if the supporting fluid cushion is completely lost by continuous leakage through a patent puncture-hole, we may expect the pressure of the brain weight transmitted through the pons to the clivus, when the patient sits up, to be considerable.

The basilar plexus on the clivus of the occipital bone is formed by an extensive anastomosis of flat venous plexuses. It is connected on either side with the cavernous and inferior petrosal sinuses, and with the enighboring blood channels (Sobotta-McMurrich). The other venous channels that drain the cranial cavity at the base are rigid, inelastic tubes, and they are thus safe from closure by pressure. The basilar veins differ in this respect of security from closure. They depend on the cushion of the cerebrospinal fluid to keep off the pressure of the pons, which is directly above. When the patient sits up, and the cushion of fluid is absent, the weight of a good part of the brain is suddenly imparted through the pons to this communicating plexus. The blood about to leave the skull is impeded, and forced to turn back and travel by other crowded pathways. The resulting congestion causes a sudden rise of venous pressure.

The sudden onset of severe headache when the patient sits up can now be understood as due to the sudden intracranial pressure due to the rise of pressure in the cerebral veins; its entire relief, when the patient lies down, as due to the fall of pressure when the weight is removed from the veins on the clivus. In the course of a week the puncture hole heals, the fluid is rapidly made in sufficient quantity to fill and distend the entire sac, and the integrity of the brain cushion or water-bed is re-established. The headache, which was a purely mechanical affair dependent on the loss of that cushion, is gone.—(*Progressive Medicine*, Vol. 1, 1919.)

An Improved Method for the Estimation of Sugar in the Urine and Blood.

P. J. Cammirdge, of London, says that further experience with the volumetric method for estimating sugar has confirmed the accuracy of the results given with quantities above 0.5 per cent., but with percentages below that amount too low a reading may be obtained unless further precautions than those described are taken against oxidation, especially in warm weather. The original experiments in working out the method for blood sugar happened to be made with freshly distilled water and in the winter; later it was found that when distilled water which had stood exposed to the air for some time was used with test solutions of sugar containing under 0.5 per cent. the readings were lower than they should have been, and that the variation from the expected result differed with the age of the water and the temperature of the air. Eventually it was proved that the error arose from dissolved oxygen in the water and solutions employed in the test.

When, therefore, a urine is expected to contain a low percentage of sugar, under 0.5 per cent., and with all blood and other fluids containing smaller amounts, the water to which the iodin solution is to be added should be thoroughly boiled, to expel dissolved air, and cooled, immediately before the estimation is to be made. It is alos advisable that the alkaline copper solution for sugar estimations with urine should be boiled in a small conical flask, provided with a loose funnel as a stopper, instead of in a beaker as previously described, and that the required amount of urine should be run into the boiling fluid from a pipette when the air dissolved in the solution, and contained in the flask, has been expelled.

With blood, etc., the 7.5 c. cm. of filtrate and 1 c. cm. of sodium carbonate solution are boiled together in a similar way in a small conical flask fitted with a funnel-stopper, and the 1 c. cm. of modified Benedict solution is added after they have boiled for a few seconds. The water used for diluting the iodine solution and for washing out the flask, etc., should have been recently boiled and cooled. With these additional precautions the method gives uniformly reliable figures, even with the small amount of sugar in normal urine and blood. (*Lancet, May 31, 1919.*)

Acute Encephalo-Myelitis.

Cleland & Campbell of Australia thus describe an epidemic:

1. *Clinically.*—An account of a form of encephalo-myelitis, occurring as an epidemic in the late summer of 1917 and 1918, confined almost entirely to certain dry inland parts of New South Wales; appearing as an acute and severe illness, often abrupt in onset, and fatal in 70 per cent of cases; affecting children mainly but not sparing adults; characterized by general signs of cerebro-spinal irritation—namely, convulsions, rigidity, heightened reflex excitability, mental obfuscation, and loss of consciousness; accompanied by fever and gastric and other disturbances; terminating in exhaustion, coma, and death in a few days, or in rapid recovery, usually complete, but in a few instances attended by flaccid paralysis or mental disorder.

2. *Histologically.*—Exhaustive microscopic examination of the nervous system in 16 cases showed acute encephalo-myelitis, universally distributed; characterized by vascular engorgement, "sleeving" of veins with lymphocyte-like cells, isolated "colonies" in and infiltration of the tissues with similar cells, and a tendency to capillary hemorrhage; affecting gray substance more than white on account of the difference in vascular supply; and seldom grossly destructive as in "acute poliomyelitis."

3. *Experimentally.*—By intracerebral inoculation of an emulsion of portions of the parent nervous system the disease has been conveyed from human subject to monkey (*Macacus rhesus*); from monkey to monkey, in series; from monkey to sheep; from sheep to sheep; back from sheep to monkey; and on again through monkeys; and lastly, from monkey to one horse and one calf—all of which results were confirmed by histological examination, showing changes unequivocally corresponding with those found in *homo*.

4. The disease in monkeys was eminently fatal, and was mainly characterized by weakness, drowsiness, and intense inco-ordination of movement. Flaccid paralysis was not a dominant feature. Some sheep gave no response to inoculation, others showed slight or no signs of disease, proving a certain degree of immunity. In the "positive" sheep convulsions commonly caused death. The inoculated horse and calf also died from convulsions.

CONCLUSION.

The disease, from the anatomical standpoint, may be called "acute encephalo-myelitis."

It resembles "acute poliomyelitis" and "encephalitis lethargica" inasmuch as the responsible, undiscovered virus has an evident affinity for the central nervous system; probably requires incubation therein, under favorable conditions, to perfect its nocive power, and produces histological changes which follow the blood vessels, hence suggesting that all three diseases may be due to mutants of the one virus.

On the contrary, however, the individuality of this epidemic; the preponderance of signs of cerebro-spinal irritation; the high rate of mortality; the common affection of adults; the infrequency of paralysis of cranial or peripheral nerves; the widespread changes in the nervous system without gross focal lesions; the susceptibility of the sheep, horse, and calf, as well as the monkey; and the reproduction of preponderating signs of cerebral irritation and of the human histological changes in all these animals, favor the conclusion that the disease is a distinct entity.—(*Brit. Med. Jour.*, May 31, 1919.)

Heroin Poisoning.

Heroin is a morphin derivative (diacetyl morphin) which is taxic, but very few cases of poisoning have been observed, doubtless because it is given only in small doses. In the *Medical Journal of Australia*, Dr. W. R. Boyd has reported the following fatal case, which is of interest not only on account of its rarity but because it illustrates the difference from morphin poisoning. A man, aged 59, after eating a pie, had severe diarrhea. After he had been in bed for three days the diarrhea diminished, but he became nervous and irritable and finally delirious. At 12:30 p. m. he was given 20 gr. of bromide of potassium. As this had no effect it was followed an hour later by a cachet supposed to contain barbiton, but which analysis of three other cachets ordered in the prescription showed to contain 6.97 gr. of heroin. In less than an hour he was sleeping. The nurse noticed an hour later that he was very tremulous, his face twitching, and his skin acting freely. At 5 p. m. he was sleeping soundly, but the arms and legs were frequently jerked with strong clonic spasms.

By 9:30 his condition was markedly changed. The respiration became labored and stertorous and very slow (7 to the minute), the face was pallid and dusky, and the spasms of the limbs persisted. The pupils were contracted to pin-points, and he could not be roused, though the corneal reflex persisted. The muscles of the back of the neck were rigid. Lumbar puncture yielded clear fluid not under increased pressure. The condition continued all night, and at 6 a. m. the temperature wac 101° F., the pulse 100, and the respirations 14. An apparent awakening could be produced by attempting to flex the head on the chest. The eyelids opened and an expression of "looking" was produced and sometimes an attempt to raise the body into a sitting posture.

The temperature gradually rose and the pulse and respiration increased as broncho-pneumonia developed at the bases. The urine was of s.g. 1008, but otherwise normal. He gradually sank and died 70 hours after taking the heroin.

Shortly before death the temperature rose to 104°. The necropsy showed the lungs engorged with partial consolidation at the bases and some odema. The liver was in a condition of atrophic cirrhosis. The vessels of the pia mater of the brain were injected. Portions of the organs when analyzed for alkaloids showed the presence of 1/64th of a grain of morphin only. The diarrhea was probably due to ptomaine poisoning from the pie. The delirum may have been due to this cause or to sudden abstinence in a man whose liver showed that he was addicted to alcohol. The coma, stertor, moist skin, pallid dusky face, myosis, spasms, and rigidity of the cervical muscles suggested narcotic poisoning, uremia, pontine hemorrhage, or meningitis. The case illustrates two points: (1) a large dose of heroin did not cause death until 70 hours after ingestion; (2) heroin is more tetanizing and less narcotic than morphin. The case confirms the conclusions of Stockman and Dott from experiments on animals. Compared with morphin, they found that "the tetanizing power of acetyl and diacetyl morphin is much greater, while their narcotic action, although visible after smaller doses, is never so profound and the depressant action of small doses on the cord, and especially on the respiratory centre, is very much greater.—(*Lancet.*)

During the war a number of somewhat anomalous cases of empyema occurred both in military and civilian hospitals. Many of them followed attacks of purulent bronchitis, influenzal broncho-pneumonia, etc., and the mortality was high. There seems to be a general impression that the *B. influenzæ* is rarely to be found in the pus, even when the illness can be traced clinically to an attack of influenza. Pneumococci and streptococci, on the other hand, are apparently commonly found, especially the latter. This fact is interesting in view of the opinion that under certain circumstances the growth of *B. influenzæ* seems to be favored by symbiosis.